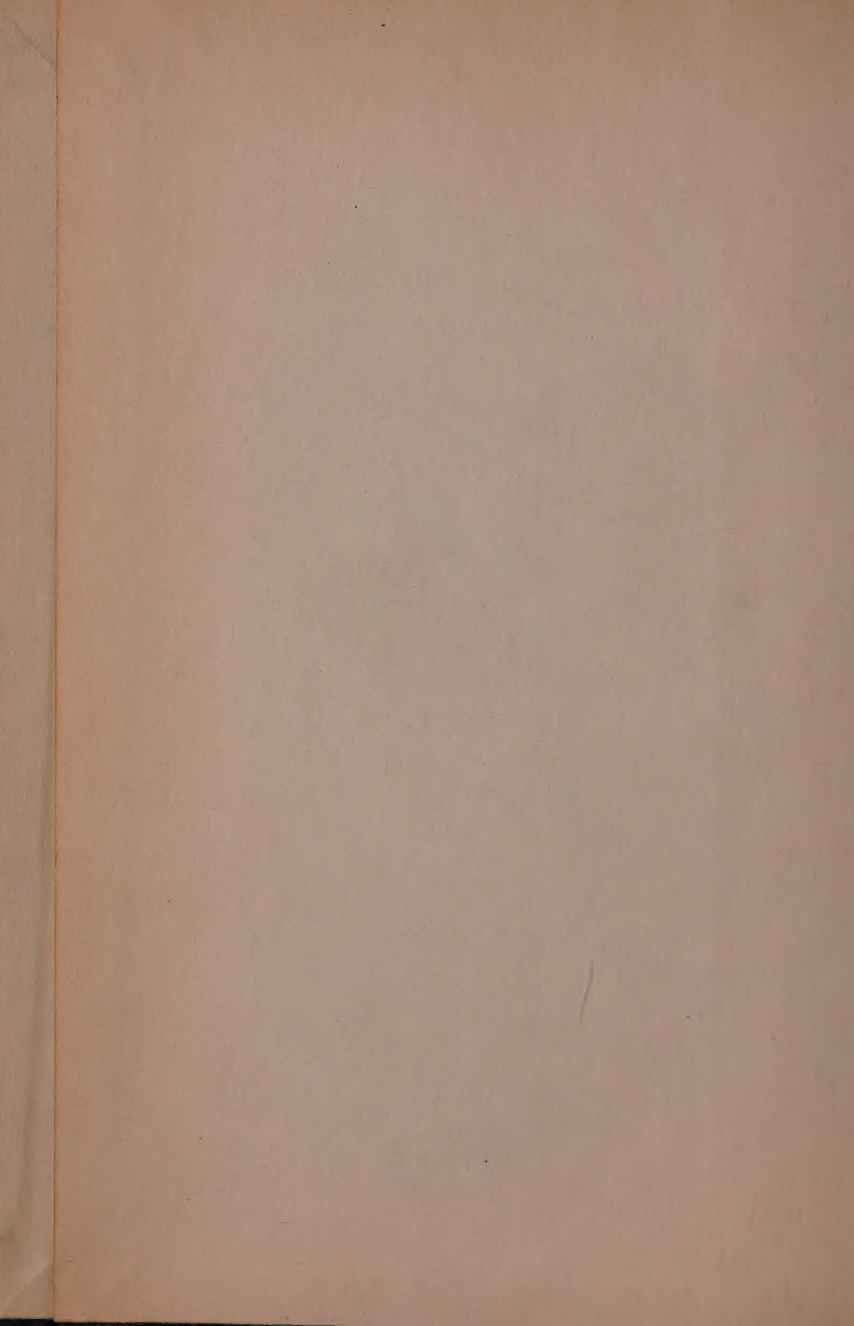


UNIVERSITY OF ILLINOIS
UNDERGRADUATE DIVISION
CHICAGO
LIBRARY





14

THE
INTERNATIONAL
MONTHLY
TRANSFERRED

Date



A Magazine of Contemporary Thought.

VOLUME I.
JANUARY-JUNE, 1900.

Published at Burlington, Vt., by
THE MACMILLAN COMPANY, NEW YORK,
MACMILLAN & CO., LIMITED, LONDON.

U OF I
LIBRARY

Copyright by

FREDERICK A. RICHARDSON,

1900.

1127

CONTENTS

	PAGE
Later Evolutions of French Criticism, <i>Edouard Rod, Paris.</i>	I
The Influence of the Sun Upon the Formation of the Earth's Surface, <i>Nathaniel S. Shaler, Harvard University.</i>	41
Organization Among Artists, <i>Charles De Kay, New York.</i>	83
The Theatrical Syndicate, <i>Norman Hapgood, New York.</i>	99
Recent Advance in Physical Science, <i>John Trowbridge, Harvard University.</i>	123
Art as a Means of Expression, <i>W. J. Stillman, London.</i>	133
Japan's Entry into the World's Politics, <i>Garrett Droppers, University of South Dakota.</i>	162
The Opera in America and Europe, <i>H. T. Finck, New York.</i>	188
The Future of the Short Story, <i>E. Charlton Black, Boston University.</i>	205
Recent Work in the Science of Religion, <i>C. H. Toy, Harvard University.</i>	217
Degeneration : A Study in Anthropology, <i>W. W. Ireland, Edinburgh.</i>	235
John Ruskin, as Economist, <i>Patrick Geddes, University of Dundee.</i>	280
Some Recent Balzac Literature, <i>W. P. Trent, Columbia University.</i>	309
Henry Irving, <i>Clement Scott, London.</i>	323

	PAGE
The Southern Question, <i>E. P. Clark, New York.</i>	340
The Institution of Society, <i>L. M. Keasbey, Bryn-Mawr.</i>	355
Recent Writing on English History, <i>E. P. Cheyney, University of Pennsylvania.</i>	399
French Drama at the End of the Century, <i>Brander Matthews, Columbia University.</i>	420
Comments on the War in South Africa, <i>E. L. Zalinski, U. S. A., (retired.)</i>	436
The Neutralization of the Nicaragua Canal, <i>Hon. John R. Procter, Washington.</i>	447
Fine Art as Decoration, <i>Russell Sturgis, New York.</i>	463
Modern Views of Matter, <i>Oliver J. Lodge, University College, Liverpool.</i>	493
The Need of State Endowment for the Advancement of Medical Science, <i>D. B. St. John Roosa, Post-Graduate Medical School, New York.</i>	531
Astronomical Photography, <i>Harold Jacoby, Columbia University.</i>	544
Social Conditions in Kentucky, <i>Hon. Wm. Lindsay, Kentucky.</i>	560
Relation Between Early Religion and Morality, <i>Edmund Buckley, University of Chicago.</i>	577
Municipal Government by Party, <i>Frank J. Goodnow, Columbia University.</i>	618
Recent Advance in Medical Science, <i>Reynold Webb Wilcox, Post-Graduate Medical School, New York.</i>	632
The Creative Imagination, <i>Th. Ribot, College of France.</i>	648
High Explosives, <i>E. L. Zalinski, U. S. A., (retired.)</i>	675

LATER EVOLUTIONS OF FRENCH CRITICISM

EDOUARD ROD, *Paris.*



QUESTION which instructors in rhetoric of about a generation ago, were especially fond of submitting to their pupils for discussion, was this: "Is literary criticism an art or a science?" Many of our distinguished contemporaries once wrote school exercises on this theme, the importance of which they doubtless, at the time, little suspected. And in reality, this question, which, at first sight, may seem hardly worth the asking, represents a whole development, a whole transformation in a species of literature which has always been cultivated in France with peculiar zeal. Is literary criticism an art or a science? This is equivalent indeed to asking in slightly different terms: "Is literary criticism personal or impersonal, objective or subjective?" Or further: "Has it, or can it have, a more general significance than that imparted by the mind of the writer who uses it as his instrument? Can it lead us to the discovery of universal truths, or ought it to be limited merely to instructing us as to the relative value of literary productions? Along with its obvious aesthetic interest, can it have as well an historical, or philosophical, or scientific interest?"

A rapid glance at the history of literary criticism in France shows us at once that this "science" or "art" has been transformed in a sense easy to determine. In its beginning, criticism meant little more than to give rules for the composition of literary

works, and to judge such works by the degree of conformity with these rules. What it was in the age of Scaliger's "Poetics," that it remained, with almost imperceptible modifications, until the beginning of our century. At that moment, the works of Guizot, Villemain, and Sainte-Beuve, enlarged the scope of criticism by introducing history into its plan. Then, after a forgotten Alfred Michiels, whose work deserves to be recalled in this connection—"Histoire des idées littéraires en France au dix-neuvième siècle et de leur origine dans les siècles antérieurs"—Taine endeavored to approach criticism to natural history. You see then how widely the answers to our question would have varied according to the epoch. The contemporary of Boileau, of Fontenelle, or even of Bayle and Voltaire—and, say what we may to the contrary, the contemporary of Chateaubriand and of Madame de Staël—would have replied without an instant's hesitation: "Literary criticism is an art." According to Villemain, who marks a step in advance, we should have had to say: "Literary criticism is an art, if history is an art; it is a science if history is a science." According to Sainte-Beuve and those great writers of history who appeared in the second third of the century, the answer would have been: "It is a science because history is most assuredly a science." And finally, according to Taine, its scientific character being still accentuated, criticism ought to be brought ever nearer to an order of research, as general as this can be made. Such was the course of its development up to that moment at which M. Brunetière, in his lectures at the "Ecole Normale," proclaimed criticism, "a science analogous to natural history." (1)

On the other hand, if you read in our reviews or in our journals the numerous articles of a critical kind which are published there from day to day, often under the signature of distinguished names, you will very soon perceive that many of these articles bear no resemblance whatever to "natural

(1) L' évolution des genres dans l'histoire de la littérature.

history;" that their sole aim, on the contrary, is to express the opinions or the sentiments of their author respecting the work in question; that occasionally even, the works they are supposed to be considering, are only a pretext fastened upon by the "critic" for discussing all sorts of extraneous things, and for giving out his own peculiar "philosophy of life." We are constrained then to admit that there are, at present, two kinds of criticism, one an art, the other a science; the first is personal, the second is, or tries to be, impersonal. The interest of the first lies in what it teaches us of the critic himself, the interest of the second, in what it teaches us of the works or the men that are made the objects of study. And with this distinction clearly established, we shall be able to examine, in their principal representatives, without danger of confusion, the two methods which we have thus characterized.

I

No one ever represented "personal" criticism better than M. Anatole France. With the same measure of good grace as of good faith, he has faced all of its drawbacks and made the most of all its advantages. He has divested himself of every shade of dogmatism. He has no more dreamed of thrusting his own individual opinions on the books of which he treats, than of taking the occasion which these books might offer, to ascend to the "laws" of their composition. This is what he himself declares, and in an unexpectedly positive manner:—

"Criticism, like history and philosophy, is a sort of novel in the hands of inquisitive and alert minds, and every novel, rightly understood, is an autobiography. He is the true critic who portrays the fortunes of his own soul amid the masterpieces through which he passes.

"Such a thing as an objective criticism has no more existence than an objective art has, and all those who flatter themselves that they are able to put aught else than themselves into their works, are the dupes of the most fallacious illusion. The truth

is, that no one ever gets out of himself. This is one of our greatest afflictions. What would we not give, if only for a minute, to behold heaven and earth through the small, numerous eyes of a fly, or to apprehend nature with the rude and simple brain of an orang-outang? But all this is closed to us. We can not like Tiresias, be a man and at the same time remember having been a woman. We are shut up in our narrow personality as in an ever abiding prison. The best we can do, I think, is to admit this frightful condition with as good grace as possible, and confess that we speak of ourselves every time that we have not sufficient decision of character to hold our peace.

"To be frank, the critic ought to say: 'Gentlemen, I am going to speak of myself, while I discuss Shakspeare, or Racine, or Pascal, or Goethe, as the case may be. I shall never, perhaps, have a more distinguished opportunity.'"

There is no danger of misunderstanding M. France. He has never departed in the least from this programme; he has repeatedly, on the contrary, come to the support of it, reaffirmed and enlarged on it. He had, indeed, a ringing controversy on this score with M. Brunetière, in the course of which he developed his peculiar point of view without modifying this in the slightest. And, throughout the whole of his work as a critic, he has been governed by the same idea. Thus the articles which he published in the "Temps," under the rubric of "La Vie Littéraire," and which he collected afterwards in book-form, are for us the most precious documents we could possess on M. France himself. They inform us, to an astonishing degree, as to the tastes, preferences, opinions, sentiments, and even whims, of a cultivated, inquisitive and resourceful mind. They prove to us what such a mind can discover in the authors he studies or in the books he reads. They are highly *suggestive*—to apply to them a word of recent origin and of rapid success—but they are not very rich in positive information. They serve as an exquisite complement to the profound and varied work of their author; but I do not believe

that they will prove of very considerable assistance to the future historians of the literature of our own time.

Of a truth, the programme which M. France has put forward with so perfect a precision in the fragment which we have just read, is by no means peculiar to him ; it is the programme, in fact, of every shade of "impressionist" or "personal" criticism, whether this criticism admits this or does not admit it, whether it fancies that it lives up to this programme or persists in the illusion that it gets away from it. The most popular of all the representatives of this form of criticism, Francisque Sarcey, has just died after having, for forty years, "judged" every new play that appeared on the stage. He believed, of course, that his judgments depended on certain general principles which seemed to him to be true and of general applicability. When he condemned a drama or a vaudeville, it was not merely because this drama or vaudeville displeased him, but more than all because it departed from that typical "drama," or from that typical "vaudeville" such as he conceived it. He had a formula which was a very precise translation of his idea. He said : "This is fit for the theatre, and that is not." But in the name of this formula, and in perfect accord with his principles, he was led into pronouncing anathemas against works which had none the less a very notable success afterwards. He failed to see the merit in these works. That is evident. And occasionally, he retracted some first impression, when he recognized that this was exaggerated or false ; for he was always perfectly sincere. And now, is there any one so shortsighted as not to perceive how completely the rôle of "principles" in such a method dwindles before that of the mere individual impression ? Sarcey delivered his verdicts in the name or the Theatre or of French Dramatic Art—a sort of abstraction of which he was the pontif—when, in fact, it was always his own personal opinion that he expressed. Whenever a piece amused him, or pleased him, it was fit for the stage ; whenever it did not tickle his fancy, it was not fit. The famous "*scène à faire*,"

which he so willingly pointed out to authors, was exactly what he would have written, or what would have met with his approval. But this canonical scene was binding only in his own thought, a proof of which we have in the fact, that the authors had not found it, and that the public had never noticed their failure to do so. And if Sarcey was generally right, it was not because his "principles" were grounded in a conception of aesthetics so much more reliable after all than that of the *Théâtre Libre*; but wholly and simply because he had a strong infusion of common sense which held him back from irrational prejudgments and from cross-grained extravagances. If one were inclined to extract from his fairly numberless contributions to the journals a sort of theory of dramatic art, I am persuaded that this theory would seem but little superior to many others, all of about the same value; but one could draw from these contributions a number of judgments remarkable for their justness, and which time has already sanctioned.

The more criticism becomes "personal," the more strongly it affirms that it can, by the same right as the novel or lyric poetry, serve to manifest a temperament, to express a writer's soul. And it is just this which criticism has been for M. Jules Lemaître. M. France hit on this method by accident, as it were, and used it only for a few years. M. Sarcey was much more interested in the works themselves on which he had to pass judgment than in the ideas which they might serve him as a pretext for giving to the world. But M. Lemaître is preëminently the subjective critic, who understands and expresses, at one and the same time, who can not speak of the works of another without the reflections which they suggest becoming his own work, who endeavors to see these works just as they are without abdicating his own right to enrich them with whatever it pleases him to put there. The first literary efforts of M. Lemaître were in poetry, and his "*Petites Orientales*" prove a delightful volume even at a second reading; later on, he tried the theatre, and "*Révoltée*" and

"Mariage Blanc" are dramas which lose nothing by a second hearing. But nowhere did he find an instrument better suited to his own true nature than was literary criticism. This he has handled with an entire freedom. He has troubled himself as little about its definitions as its destination. He has never taken it on himself, as M. Sarcey did, now and then, to deliver infallible judgments, nor "to educate the tastes" of his contemporaries, nor even, I believe, as M. France does, to interrogate his own soul as he reads. His avowed aim has never been more than to jot down his own impressions—impressions that have ever been essentially mobile, no tincture in them of dogmatism. At the outset of his career, he wrote :—

"How then could literary criticism, with any show of reason, ever set up for a system? The works we write about defile before the mirror of the mind ; but since the procession is a long one, the mirror changes, in the meanwhile ; and when by some chance the same work returns, it casts no longer the same image. We declare what we like to be good, that is all (I am not speaking here of those who think they like what other people tell them is good) ; and naturally some always like the same things, and fancy they must be equally pleasing to the whole world, while others of a feebler sort experience ever-changing impressions, and allow these to influence their judgments. But literary criticism, whether it dogmatizes or not, and however great its pretensions in general, never gets beyond merely defining the impression which this or that work makes on us at a given moment—a work of art in which the writer, in his turn, has merely written down the impression that the world made on him at some given moment."

If the above may be called a programme, we shall have to admit that M. Lemaître has remained faithful to it. And what is more, he has never hesitated to magnify its importance, to come boldly on the stage behind the authors of whom he is treating, and often indeed directly in front of them. M. Lemaître got ere

long to "doing a little criticism" just as a poet "does" his verses, as naturally as a bird sings, and with no more effort; and with the result, that his "Contemporains" and his "Impressions de Théâtre" constitute genuine works of art in which there is as much originality and creative energy, so to say, as in the work of some novelist, or dramatist, or poet—and of the first order at that. M. France was assuredly not thinking of himself alone, but of M. Lemaître also, when he wrote, in defining his own critical method: "Literary criticism is, in point of time, the latest of all literary forms, and it will end perhaps by absorbing all the others." We live in an age indeed in which "literary forms" have become of less importance, have lost their more precise character; they interpenetrate and are not loath to exchange distinctive features. The critic exercises himself on these forms; he seizes them, analyzes, exhausts, blends them. He draws out their essence. He changes them into a new form which is much less precise, which is indeterminate, subtle, penetrating, plastic. Authors are fond of reproaching him with his "impotence." This is an unjust reproach. A play, a poem, a writer are for the critic only a theme, a point of departure; when he has completed the commentary for which they furnish him the pretext, he has performed a creative act. The readers of M. Lemaître are well aware of this.

This is especially true of the critic who exercises himself on the works of contemporaries. The conditions of his task are very different from those of that other critic who aspires to become the historian of literature. M. Georges Renard (1) has, in a few lines, characterized, with great precision, the essential difference between the two "species": "Criticism," he says, "is both a question of science and a question of taste; it is a twofold process, objective and subjective, first, an exact ascertaining of what the subject is, and then the individual appreciation. It contains thus two elements which are combined in unequal propor-

(1) *Les Princes de la jeune critique*. Préface.

tions. *Criticism of the past* and *criticism of the present* differ in that the proportion of these two elements is and ought to be exactly the contrary in the one of what it is in the other." Nothing could be juster than the above. "Criticism of the present," we may count on it, can not, from its very nature, be "scientific." We do not take our lessons in physiology on the living; we wait until they are dead to dissect them; for the laws of humanity forbid us to treat them as if they were dogs or guinea pigs. Likewise, we can not enter upon the work of analysis, demonstration, classification, definition concerning writers whom we meet every day, whose work is not complete, concerning whom we possess only imperfect information, and who are members of the same literary world that embraces us also. The best we can do, is to say that we like them or do not like them, and try to explain why, and to express the ideas, whether fraternal or the contrary, which the reading of their works suggests in another mind. This is so evident, that the masters of "scientific" criticism have never dared to apply this to contemporaries; and when Taine, toward the end of his "*Histoire de la Littérature Anglaise*," came to speak of contemporaries, he was forced to modify his method.

II

It was Taine, indeed—though like all discoverers, he had his forerunners in this direction—who first clearly conceived the idea of allying the critical method, or rather that of literary history, with the methods of the natural sciences. In his hands, and according to his formulas, criticism tends to become "a sort of botany applied not to plants, but to human works." It is based on the law of "mutual dependencies," accepts the literary work as the "sign of a state of mind," which it believes that it can explain by the influences of *race*, *environment*, *moment*. The admirable writings in which this method is unfolded are so universally known that it will not be necessary for me to attempt even a brief exposition of them here; and it will suffice merely to re-

mind the reader of the "*Histoire de la Littérature Anglaise*," the "*Essais*" and the "*Nouveaux Essais de critique et d'histoire*," and the "*Philosophie de l'Art*."

Before discussing this method itself, which has aroused vigorous antagonism in many quarters, I have certain reserves to make as to the way it was applied by the powerful initiator himself. Taine was a thinker of such perfect good faith, that he never suspected the credibility of any testimony. Moreover, in his interpretations of manners and "states of mind" by literary works, testimony plays an important part. If he wishes, for example, to explain the "state of mind" in France at the close of the seventeenth century, he will consult Saint-Simon; if he wishes to describe the Italy of the Renaissance, he will despoil the *Memoirs* of Benvenuto Cellini, just as he will trust those of Pepys when he is speaking of the Restoration of the Stuarts. *Memoirs*, journals, correspondence, will become for him the forced complement of the work, will furnish him with the light he needs to clear up its dark places, the key to its inner meaning. But we are beginning now to suspect that these "sources" are singularly untrustworthy; we have seen some of them gush forth around us in our own time; we know how much more conspicuous in them than the truth, is the lie. Many of these are consecrated documents, it is true, but even here a considerable revision seems indispensable. We are beginning—to confine ourselves to the examples just cited—to suspect that Saint-Simon was not always of a quite absolute veracity; we would ask that Pepys be held in check; and Benvenuto Cellini very often has the air of a "humbug." There is too close a personal interest, too personal a vision, too often an air of anxious apology in these confessions about other people in which some man, all mixed up in the events which he relates, makes himself central to every movement. There is too much idle gossip gathered in without scruple in these pages which edge their way into celebrated alcoves, or profess to spell the secrets of illustrious consciences. The authors of

"memoirs" are witnesses, if you insist on it, but all too unreliable witnesses, whose familiar talk, though written, is worth no more than that which is exchanged every day in the green room of the theatre, of politics, of the world. If some Taine, a century or two hence, shall undertake to describe our epoch, for example, after the "*Journal des Goncourt*," he will assuredly make a very highly colored picture of the same, but one that will bear very little resemblance to what we were. The question here is one of a purely practical reserve of judgment which would have no excuse for existing, if all mankind had the admirable good faith of a Taine—a reserve, however, which, as I willingly admit, does not impinge on the method itself. But is this saying that the method is impregnable? Far from it. However interesting and fruitful this method may be, and though it seems destined to survive as one of the chief products of philosophy in this century, it has already given rise to the gravest objections even on the part of those who have been the most directly inspired by it. I wish to emphasize this: the critical method of Taine is the very foundation of "scientific criticism" in the form this exists to-day.

This expression, "Scientific Criticism," is the title of a little work, of an exceptional range of vision, which appeared in 1888. The author, Émile Hennequin, died at twenty-nine, before he could carry out the programme which he prescribed to himself there. But his little book is worthy, none the less, of a large place in the picture we are trying to sketch.

The essentially inductive method of Taine regards a literary work or a work of art as a product of various causes, the most essential of which (race, environment, moment) are independent even of the personality of the author. Hennequin intended to maintain, on the contrary, that no one of these causes equals in importance this personality of the author, which remains the true and mysterious source of the work created; that the influence exerted on the artist by race, environment, moment, is most difficult to determine, that so far as the race is concerned, this influence can be so good as denied.

"Anthropology," he says, "has demonstrated that from the remotest ages, races are mixed, that they are composed of various types. History proves that there have been no nations formed from a single race." All nations, from the Egyptians to the Assyrians, from the Hebrews to the Phœnicians, from the Hellenes to the Romans, from the Aryans of India to the Iranians, from the Chinese to the prehistoric tribes of the north of Europe, have been formed by conquering nomads, themselves modified already, in great part, by the numerous ethnic elements which they had taken up into themselves on the way, modified by obscure autochthonal tribes, which they had subjected and enslaved, but with which they mixed in the end. Examination of the skulls of mummies, the examination of bones, of iconographic monuments of more ancient date, proves that there were, in each social group, as far back as we can go, several distinct somatic types which intercrossed and held on with such tenacity that they survived and multiplied. England proper, which ought to have been protected by its insular position from invasions, presents a considerable number of different races, a brief enumeration of which has been made by Mr. Spencer in the first pages of that part of his "Descriptive Sociology," which is devoted to this country. He declares that "the Britons, who form two distinct ethnological types, are differentiated, by the hair of the head and by the form of the skull, from the tribes of Angles, Jutes, Saxons, Cymri, Danes, Norse, Picts and Scots. Finally, from the Normans, who according to Augustin Thierry included ethnic elements taken up throughout the whole west of France. Just as it ought to have been, all of these varieties have persisted, have been so thoroughly mixed and diversified that in this nation, one of those, in the meanwhile, which are especially marked by distinctive traits, we find the most widely removed types, southern, Scandinavian, Iberian, mongoloid." We see then, at a glance, the concrete examples which are brought forward in support of this argument. The geniuses, whose sum total composes the literary gallery of the

country, differ so very greatly; and where then is that feature, common to all, which would justify us in inferring a community of origin? Hennequin is almost as skeptical as to the influence of the epoch:—

“Do we not see, right under our eyes, in the Paris of to-day, literature and the arts presenting the most heterogeneous picture that one can imagine, the novel passing from Feuillet to M. de Goncourt, from Zola to Ohnet; the short story, from M. Halévy to Villiers de l’Isle Adam; poetry, from M. Leconte de Lisle to Verlaine; criticism, from M. Sarcey to M. Taine and M. Renan; comedy, from M. Labiche to M. Becque; painting, from Cabanel to Puvis de Chavannes, from Rafaëlli to Hébert; music, from César Franck to Gounod and to Offenbach?”

This analysis, of which I give only the salient points, leads the young writer to conclude, exactly the reverse of Taine, that great men are not so much *effects* as *causes*. Of course they receive something from their race, from their environment, from their age; for it is very certain that we could not conceive of a French Shakspere, a Spanish Racine, a German Dante, an Italian Goethe; and just as little, of an Offenbach living at the court of Louis XIV, or of a Renan teaching philosophy in the time of William of Champeaux. But they give more than they receive; they it is who determine the great intellectual currents of the time; and it is by them and through them that we must study the great mute masses which they represent. The plan, therefore, which Hennequin recommends, is to begin with an aesthetic analysis, the starting point of all criticism, and then pass on to the psychological analysis, which endeavors to ascend from the work to its creator:—

“When once we have collected, winnowed and stated precisely all these aesthetic signs, have translated them into their real sense, that is, as a series of mental facts, and have expressed these facts in the exact terms of psychology, the task before us then will be to bring together all these scattered points, and to unite

and coördinate them by means of an hypothetical reconstruction of the mind, to which they, so to say, give us the clue, to form, in other words, an hypothesis as to the activity and the nature of the great organs of this soul, an hypothesis which will enable us to figure to ourselves what this soul must be to cause the manifestations previously determined. We must say : these mental facts deduced from aesthetic facts, proceed from an unknown mind, whose nature they determine ; and so it remains for us then to find out exactly what this mind ought to be in order to fulfill the laws of general psychology and at the same time to produce the particular manifestations of the case studied."

When we have thus passed from the work to the man, we must push still further back by means of sociological analysis, from the man to the social organism of which he is a member. And to accomplish this, it will no longer be necessary to busy ourselves with the artist or his works, but with his admirers ; in other words, instead of trying to determine the influence on him of his environment—our aim will be to show his influence on the environment—an inquiry which will be facilitated by the peculiar measure of resemblance between a work of art and those who enjoy it or who are offended by it, in whom it excites pleasure or disgust.

"Every work of art," he says, "if it touches at one end the man who created it, touches just as surely at the other a group of men whom it moves. A book has readers ; a symphony, a picture, a statue, admirers. If we can establish, on the one hand, that the work of art is the expression of the faculties, of the ideal, of the interior organism of those whom it moves ; if we remember, on the other hand, that the work of art is, as we have already shown, the expression of the interior organism of its author, we shall be able to pass, by the intermediary, from him to them, and to infer in his admirers the existence of a totality of faculties, of a soul analogous to that of its author ; in other words, it will be possible to define the psychology of a man, of a group of men, of a nation by the

special character of their tastes which are an integral part of their whole being, of what they are in character, thought and sentiment."

After these three successive operations, criticism will finally be able to reach its true goal, the complete reconstruction of the human groups which artists and writers represent, and to become in its turn a creative power. Hennequin brought an admirable breadth to the amplification of this new science, which remains incomplete, it is true, but which it was his dream to perfect, of which his first book remains the programme, and of which, as it proved, he was able to leave only a few sketches. Perhaps there was a certain element of fantasy in his youthful enthusiasm; he forgot, perhaps, that as yet, at any rate, in spite of the many efforts to explore the mystery, intellectual phenomena and the laws which dominate the moral life of nations and individuals, escape analysis. His tentative is, however, none the less brave and valuable; and his book remains the most suggestive one that we can read on this question of method, a question of ever-growing importance.

III

Hennequin's book was much discussed at the time of its publication. But his theory met with slight favor at the hands of the critics, of whom M. Brunetière was almost alone in appreciating its extraordinary worth. Accustomed mainly to write off their own impressions of literary work—an occupation of unusual seduction for minds that are so alert and so resourceful—the greater number of these critics by profession are strongly inclined to hold on to their own "method," (if this word fits here,) and are disposed to be facetious when one compares them with "men of science." Their airy uncertainties enchant them; they are unwilling to part company with the mobility of their impressions; they insist on the right to indulge their caprice. This appeared very clearly a little later in the rather lively discussion (1891) that arose between M. Brunetière and M. France. M. Brunetière had just published his superb lectures

on the "*Évolution des Genres dans l'Histoire de la Littérature*," the importance of which I intend to touch on presently; M. France was pursuing in the columns of the "*Temps*" the brilliant series of his "*Vie Littéraire*." M. Brunetière was striving to arrive at a powerful synthesis: M. France had just declared that "an objective criticism has no more existence than an objective art has;" M. Brunetière affirmed that it was possible to attain to such a criticism by an effort of the will. The whole seemed like some final episode in the old controversy between Realist and Nominalist. One affirms that we can judge nothing except through our own mind, the other that we can obtain a more general criterion. "The dupery," said M. Brunetière, "is in believing and teaching that we can not get out of ourselves, when, on the contrary, this is exactly the business of our whole life. And we shall realize how imperative is this necessity, if we will only take into account the fact that otherwise, neither society, nor language, nor literature, nor art would have been possible." But this reasoning did not convince M. France who replied: "General principles elude us everywhere, and especially in our knowledge of works that are the product of mind. Every poetic or artistic work has been, from the beginnings of literature, a source of controversy, and it is, perhaps, one of the greatest charms of beautiful things, that they ever move in this atmosphere of indetermination." It is superfluous to add, that neither of the two knights succeeded in obtaining a victory over his opponent; but spectators of a more judicial turn who were present at the tourney, began to understand a little better, in consequence, the distinction which we established above—to employ once more the expressions of M. G. Renard—between "criticism of the present" and "criticism of the past."

M. Brunetière, who constantly uses both, ought, perhaps, to have elucidated the two methods by a mutual comparison; and it is very probable that the necessity which he experienced,

while exercising the criticism of the present, of a more reliable principle than that of mere individual judgment, put him on the road to his great historical doctrine. M. Brunetière, whose method is diametrically opposed to that of M. France, concerns himself much less about brilliancy of ideas or about the beauty of the works that he reviews than about their moral, and above all, social bearings.

He has always been of the opinion that a certain germ of immorality is implanted in the very nature of art, and he condemns unsparingly those works which seem to him to favor the unfolding of this germ, however beautiful the works may be in themselves, and even there, perhaps, where he himself derives a certain pleasure from them. But on the other hand, M. Brunetière is not disposed to judge artistic work exclusively, nor mainly even, by the measure of the "good it will do"; for this principle, which was carried to an extreme by men like Vinet, is always in danger of warping the aesthetic judgment—and in a sane appreciation of a work of art or a literary work, beauty must always preserve its rights. We ought not to fail to read the whole chapter devoted to M. Taine, especially the unique passage in which he reveals to us the author of the "Essais" struggling with the necessity, which he did not perceive at first, of establishing for himself some definite criterion, if he would form a correct judgment. Never have the fatal contradictions and the insurmountable difficulties in the pathway of the critical conscience been exposed in a more perfect good faith. As we read these pages, we seem to enter ourselves into the doubts, into the scruples, I am tempted to say, into the agonies of a conscientious critic who is haunted by the sense of his responsibilities. We begin to see how complex is the nature of the task before him. Literary works, especially those whose importance is considerable, whose influence is great, raise at once all, and most delicate, problems. Their beauty has claims which the artist can not afford to despise; but at the same time, they exert a

twofold influence on society, and on the individual, which the thinker can not afford to neglect. These works are a revelation of the aesthetic genius of the man in the fullness of its liberty, and they are none the less a revelation of the elements of his moral life, and of the active forces which he has launched into the world. To form a correct judgment, we must consider them simultaneously from these three points of view,—and from each of the three, we perceive them under a new angle, in a new light. The “virtuous” work may shed about it a mortal tedium, the beautiful work conceal a subtle poison; and there are books whose consequences have been enormous and prolonged, which have contributed to the downfall or to the upraising of nations. There was a time when criticism came off creditably, if it merely possessed “impartial wit, good taste, and a knowledge of the world.” This time has passed, and we shiver at the programme which M. Brunetière draws up for the critic of to-day. He himself, moreover, admits freely, that “merely human forces would not be sufficient for carrying it out.” The critic ought to know all languages, be acquainted with all literatures, be informed in all the arts, and versed in all the sciences. And “even this is not enough.” “Granted that we are already able not only to feel everything, but also to understand everything * * * we must, in addition to this, have the power of so completely abdicating our own individual preferences, of so abstracting ourselves from these, that we could, with equal ease, convert ourselves, one after the other, into the impassioned subject and the impartial judge. But we ought, before everything else, to know ourselves, to be able to detect the workings of that personal equation, of which we are, as a rule, unconscious, and which steals so inevitably into our impressions and into our judgments; to know how much these judgments differ in us, in kind and degree, from what they are in other people, or ought to be in other people; to know finally, in each case, the exact measure in which we ought to reduce them in order to bring

them within the limits of justice and verity." Impossible formula, chimerical and contradictory universality, vision of the absolute which brings out in all too cruel relief the limitations of the relative. Were this ideal ever realized, criticism would be the one supreme science, the last word of human intelligence as to life. The probabilities are that it will never reach this, nor anything near it; for make what effort we may, or however perfect the criterion we may manage to set up before us, we shall never succeed in knowing literary works as we know the organs of animals or those of plants, nor in passing from these to their causes as we pass from the leaves of a tree to its trunk. There is, indeed, at the base of all criticism an extremely delicate "equation," that of the relations between the work and the man who produced it. However slight our acquaintance with literary or artistic circles, we all understand both the importance and the peculiar difficulty of this equation. We have all seen, at one time or another, rather mediocre minds producing works of considerable distinction, and we have often seen very distinguished minds producing mediocre works. It frequently happens that a writer, who is practically a nullity, produces a noteworthy book and only one. Must we then seek the clue to his personality in his single masterpiece or in the mass of his tiresome works? And who will be equal to explaining by what logic of circumstances, by what mysterious and imperceptible relations between his time, his life, habits, character, etc., this man has produced at one moment a volume or a page which literary history can not afford to neglect, and which stands out in such strong contrast, in its quality and even in its character, from the rest of his work? The difficulty of this "equation" seems to me the strongest objection that one can raise against the theory of a scientific criticism. M. Brunetière reminded Hennequin of this difficulty, and he did not lose sight of it in formulating his own method.

The exposition of this method is not yet complete. We

possess only one of the two volumes on the "*Évolution des Genres dans l'Histoire de la Littérature*;" but, on the other hand, we have in full the course of lectures delivered at the Sorbonne, the "*Évolution de la poésie lyrique en France au dix-neuvième siècle*." We can thus form for ourselves a fairly correct idea of what the eminent writer thinks of the doctrine of evolution as applied to the historical and critical study of literature. He explained his point of view with such clearness, in a manner at once so complete and precise, in the first lecture of the "*Évolution des Genres*," that we can not do better than refer the reader, first of all, to this succinct and definitive "programme." But since we are not able to enter into the discussion of all the details, we shall confine ourselves strictly to the "leading idea," which stands out in such fullness and simplicity.

"Species" exist in literature, in art, and in history as well as in nature; they are developed, modified, and transformed in the same way. They have certain relations, which are determinable; we can also discover how they succeed one another, how they are engendered in history, and whether "the bond which unites them is chronological or genealogical." When this is determined, we have then to establish their "aesthetic" relations. Example: "Is religious painting necessarily superior in itself to landscape painting from having been the first to appear? And if so, why? Or if the contrary is true, in what shall we say that the superiority of the second consists? Or again, if each can boast of qualities which the other does not possess, can one say, appealing to what principles, that in the transition from one form to the other, there followed gain, enrichment, progress, or, on the contrary, decay, impoverishment, diminution—from an artistic point of view?" When once we have fixed the genealogical relations, and the artistic relations of these species, we must then try to discover whether they have also scientific relations, and whether these relations can be definitely determined. Are they governed as to formation, development, metamorphosis by "laws" more or

less analogous to "that progressive differentiation which, in living nature, causes matter to pass from the homogeneous to the heterogeneous, the unlike to proceed from the like?"

We perceive, at a glance, that this third point is at once the most essential and the most original. The two others have, for a long time, been familiar in criticism; that old rhetoric, which is well-nigh abandoned to-day, was fond of working at a "theory of species" which marked the character of these species and endeavored to trace their development; and Boileau, even in his age, was fond of comparing them with one another. What were his definitions of the ode, for example, and of the elegy, the close distinctions which he made between tragedy and comedy, but comparisons? These comparisons lack scientific exactness, I admit, but they are, none the less, the first step in that study of "aesthetic relations," the necessity of which M. Brunetière has demonstrated. The definition and comparison of species were likewise commonplaces of the old criticism, so also the comparison of one author with another. Was it not this very comparison which furnished Saint-Marc Girardin with the whole programme of his "Cours de Littérature dramatique?" But Saint-Marc Girardin, like all of his predecessors and the majority of his contemporaries, compared for the pleasure of comparing. It never occurred to them that the real cause of their capricious comparisons was "the same, absolutely the same cause" as that which compels the naturalist to compare the "ornithorhynchus and the kangaroo." They never dreamed of going deeper, of trying to find as the goal of their efforts those laws which unquestionably exist and which determine literary production. They would have been considerably puzzled, if one had compared them with botanists, or had prescribed as the limit of their research certain precise formulas into which the sources of all their observations would finally come to be condensed.

But is that possible?

We must seek the reply to this question of practical order in

the other works of M. Brunetière. He seems to be in no doubt about it. Examples support his doctrine. Take that, for instance, of French tragedy. The "species" is dead, after an existence whose clearly marked stages can be followed now with certainty. Other species are transformed; it is thus that "pulpit eloquence in the form which it assumed in the seventeenth century, has become in our times the lyric poetry of Lamartine, Hugo, Vigny, Musset." And again, there are "species," like the novel, which are formed "from the remains of several other species." All those "species," the study of which can serve the purpose of a more general verification, serve to classify literary phenomena, to lead to the discovery of those laws the search for which is the single goal of criticism considered as a "science analogous to natural history." But suppose one were to subject to a certain scrutiny, I will not say the conclusions, but the definitions and likewise the strata of M. Brunetière? And that would not be difficult. Further on, a doubt forces itself upon us. How can we admit the distinction indicated between the development of tragedy and that of lyric poetry? Why is the first *dead* while the second is *transformed*? Is it not possible that one could maintain—and with how many appearances in his favor—that tragedy has been *transformed* too, and that it has become the Romantic drama? Hardly to the point would be the reply that the Romantic drama came from Shakspeare and Calderon, that it had all along an independent existence outside of France, an existence parallel with that of classic tragedy. And it is just here that comparison will serve our purpose. It will point us first to the strong *dissemblances* which distinguish a drama of Hugo from a drama of Shakspeare or of Calderon and finally it will enable us to demonstrate that these *dissemblances* are nearly always *resemblances* to the tragedy of Corneille or even of Racine. The choice of subjects, the quality of the adventures and that of the characters, the general style, plan, composition—all of those elements which we find to be almost exactly similar in our

drama and in our tragedy. Romantic theorists may make as many assertions as they please to the contrary; but Romantic dramatists have succeeded only in continuing tragedy—without ever equaling it, and we could easily prove that their drama is only an episode in the decay of this illustrious species. But shall we discuss the second example, that of lyric poetry in our age? M. Brunetière was a hundred times right in indicating its connections with other apparently remote species. But he also marked out its relations with an anterior lyric poetry; and one can not fail to recognize that these relations remain essential. Who does not see, for example, that the poetry of Lamartine has proceeded from that of Parny just as the poetry of Hugo from that of J. B. Rousseau and from Pindar-Lebrun? In the beginning, rhetoric is almost homogeneous; but its various forms are gradually differentiated.

I have put a red bonnet on the old dictionary.

Very well. But the “old dictionary” continues under the “red bonnet,” and is very slightly hidden at that.

We do not deem it necessary to prolong this discussion. I have touched on it only in outline, to show how very difficult and debatable, in the preparatory study of ideas and of literary forms, is the ascertaining of those primary facts upon which all our research and all our conclusions must rest. In comparison with this, the task of the naturalist who is studying plants or insects, seems extremely simple. The naturalist confines his observations to wings, antennae, petals which he manipulates at will with his pinchers, which he places under his microscope, which he can draw or describe with an unerring precision. The critic has no such advantages; he has neither pinchers nor microscope; and how great is the difficulty which he experiences in performing the most elementary part of his work, the labor of observing, comparing, describing! The “facts” to which he appeals, are after all, when it comes to a final analysis, only “opinions;” and each one of these facts which he may bring

forward, however solidly he may seem to have propped it up, will be immediately disputed.

You begin to see, that turn the question of "scientific criticism" about on whatever side we choose, we find the same obstacle in our way. And must we conclude then that the difficulty is insurmountable? I am not ready to assert this. A difficulty is not an impossibility. Besides, even if criticism ought never, from its very nature, to attain to the severity and mathematical precision of the natural sciences, the idea is none the less excellent of trying to approximate the method of literary criticism to that of the natural sciences. The search until now after these mysterious and unknowable *laws* which determine the formation and the development of a given work of art, leads, at any rate, to a discovery of general principles which rejuvenates or enhances the method itself, whether of literary history or of criticism. Let any one who is disposed to doubt this, compare Taine's "*Histoire de la Littérature Anglaise*," or M. Brunetière's "*Manuel de l'Histoire de la Littérature Française*" with works of an analogous character which were composed half a century ago. The comparison would enable one to measure the distance we have come, and also to understand the importance of these questions of method, which may still seem idle to many, but in the study of which are to be found, perhaps, the primary source of all real progress in the sciences, be these what they may. It is in nowise puerile to ask whether literary criticism is an art or a science; and if you affirm that it is a science, you must assuredly approach its method to the methods employed by the other sciences. It will always continue, perhaps, to struggle with a measure of uncertainty; but its course will become less hesitating, less capricious, less arbitrary. And if that is not all that we can desire, it is still a real gain.

IV

But is this saying that criticism of the past—or, in other words, literary history—ought necessarily to become scientific,

and lose all claim to exist when it does not become so? Not at all. And as a proof of this assertion, we have the very imposing works of the critic whom we must name in the same connection with M. Brunetière, M. Émile Faguet.

M. Faguet is not unacquainted, I need not state, with any of those efforts in the direction of a "scientific criticism" of which the "*Évolution des Genres*" is the most recent. He understands them marvelously well because he understands everything. He has taken occasion to give his views on them in an article devoted to M. Brunetière (*Revue de Paris*, February 1, 1894), an article to which we can turn for his ideas on this subject. They are perfectly simple and perfectly clear, as are all the ideas of this preëminently lucid mind, which touches on nothing without illuminating, explaining, adorning it. In accord with M. Brunetière, M. Faguet comes to the defence of "impersonal criticism;" and see how he circumscribes and solves the problem by a profound and decisive observation. It is not a question, he declares, of judging by a detachment from the self, because that is impossible, as M. France has demonstrated on so favorable an occasion. We must try, on the contrary, "to judge with those parts of ourselves which are, in the least degree possible, mere phases of temperament, and in the highest degree possible, with those of our faculties which are penetrated and moulded by experience, by study, by investigation, by the not-self." Consider, for a moment, the sense of this definition; it is exactly the opposite of the assertions of MM. France and Lemaître, which we have noticed above, since these claim for the critic the right of judging after his own pleasure and individual opinion—that is to say, precisely according to the most personal parts of the self. This definition admits the principle that criticism can express something more general than the self of the critic. It prepares us to accept an authority to which we are all the more willing to submit because we feel that the author has also subjected himself to it.

We saw how his idea of impersonal criticism led M. Brunetière first to scientific criticism, and then to his doctrine of the "*Évolution des Genres*." M. Faguet pauses with a certain measure of bewilderment before this doctrine. He does not fail to appreciate its greatness and its charm; but he does not seem disposed to accept it just as it stands. In commenting on it, he attenuates the more inflexible, more "scientific" element. He grants, indeed, in the outset, that literary species are not "pure abstractions," but he reduces them to mere "tendencies of the human mind." "Species," he says, "is the representative being of all those beings which experience profoundly the tendency that it expresses." And he adds: "To consider this, therefore, as a living being is neither a myth nor a metaphor, it is simply an abbreviation. It is designating a human group by a single word." To write the history of the evolution of species, will be then, according to M. Faguet, "to study the moral evolutions of humanity by the evolutions of its literature." We are very far here from that method of research, the goal of which is to discover, granting that these exist, those problematic laws which determine literary production and that human thought of which literature is the outward sign. We return then to the simple historical method; criticism escapes from the domain of the "natural sciences" to become once more a branch of history. And, nevertheless, the theory of evolution is there, not merely defined, but exercised with peculiar authority. One can not deny evolution, one can not deny the well-founded, indisputable element of truth in it. The evolution of species exists, "because human tendencies are themselves transformed." But looking at it simply as a method, it is dangerous like all methods, and one that ought to be controlled and watched at every step, but none the less, as we admit, a singularly useful, efficacious and ingenious method, one that allows us to arrive at that relative truth which is alone possible in literary and moral questions, with a very apparent rapidity and directness, and at the same time, remains

free to summon to its aid all the forms of verification and of proof that one ought and may wish to summon and may deem necessary." You perceive the idea in these definitions and shades of difference. They show, at any rate, that M. Faguet is not tempted in the least to adopt the "scientific" method, that, while understanding the advantages this method can offer, he is not disposed to try it on his own account.

His entire work shows that in the pursuit of his critical studies, he has adhered resolutely to the same point of view, without yielding to the temptation to change his objective, perhaps even without having experienced such a temptation. Fully conscious, as he is, of his own order of mind, he has followed its leadings to the end; he has clung insistently, if we may thus express ourselves, to the methods and the procedures which this order of mind would suggest. His critical work has been fashioned according to his temperament as a man and a writer, with the result that his criticism is what he himself is, is engaged first of all with the problems which engage him, and aims far less at being a theory than the direct manifestation of an exceedingly strong personality. If, therefore, this criticism is not employed in the spirit of the "natural sciences," this by no means signifies that M. Faguet blames or condemns those who like Taine, Hennequin and M. Brunetière, have endeavored to turn criticism in this direction. It means simply that the natural sciences have no great charm for M. Faguet, or that he is not sufficiently acquainted with them to feel inspired by them. He is a psychologist, a moralist, a historian: he does not wish to be more.

The three words which I have just used, psychologist, moralist, historian, furnish, it seems to me, a complete definition of M. Faguet. But it still remains for us to point out in what proportion these three elements are mingled. History takes the lowest place, though not that M. Faguet intends to neglect history. He knows that a writer is not an isolated being, but that we find him in close relation with his predecessors and contem-

poraries, that he is subjected to certain influences, that he exerts an influence, that he is in part the product of certain causes, that he becomes, in his turn, an active force; and M. Faguet does not deem it beneath his office to determine these relations; but he generally confines this study, which is capable of an almost indefinite amplification, within very circumscribed limits. Let us take, for example, his latest work, the ideal "Flaubert" which he has just published in the collection of the "Grands Ecrivains Français." We may read on the first page: "Gustave Flaubert is therefore a man of Champagne on his father's side, and a Norman on his mother's." But imagine this subject treated by a writer from the school of Taine. You would have immediately under this head a dissertation on Champagne and on Normandy, characteristics of the popular temperament in these two provinces, descriptions of landscapes which are probably reproduced in the "Madame Bovary," comparisons between Flaubert and other great Normans and other celebrities from Champagne. M. Faguet is content merely to note: "We are not justified, however, in drawing from his family any induction respecting his character and his turn of mind." But then, reflecting that this affirmation is perhaps too imperative, he modifies it in these terms: "We can only observe that as regards the appearance of the outer man, he was through and through Norman. Tall, powerfully made, destined to become slightly fat as he grew old, visage with large and pronounced features, prominent nose, lofty brow, full eyes, pendent moustache, a true Viking; he very evidently resembled his mother and the ancestors of that lady." So much for his family. Flaubert resided chiefly in the country and has described the country: we should certainly then expect reflections on French country life, so different in its manners from that centre where the majority of our men of letters reside,—Paris. There are no reflections of this kind. After a very brief biography, sixteen pages, the critic abandons entirely the narrative tone, which he

has assumed only for the moment, portrays from the facts at his command the character of his author, then defines his "turn of mind" and his general ideas. After which, he studies the two tendencies which are revealed in the work, now isolated and now combined, romanticism and realism. Finally, he explains in what the personal art of Flaubert consists and traces the influence which the author exerted on his contemporaries and on the immediate heirs of his genius.

This scheme reappears, accompanied by the variations which the peculiar individuality of the writers necessitates, in the majority of the great studies of M. Faguet. Whatever the importance of the man and of the work which he studies, he lays hold of the problem in the same way and treats it after the same method. For him, the writer exists, first of all, as an individual entity; the problem is, first of all, to possess, to understand him, and to make others understand him. He is a machine of complicated wheel-work, which it is first necessary to take to pieces, to inspect its mechanism, and then put together again. The interest is neither in the study of race or family antecedents, nor in that of his existence, nor in the search for those general laws by which his activity is, perhaps, conditioned; the interest lies especially *in the ascertainment of the relations between the self and the work.*

I believe that the words which I have underlined, are a very adequate definition of M. Faguet's critical method, in fact, an almost complete definition. All of his "studies" tend in this direction, namely, to explain to us how a certain man, with certain good and bad qualities of head or heart, has been led to think in a certain fashion and to produce certain works. I will add that this study is always carried out with the strength of a master, that the psychological analysis of the writer is, in the majority of cases, a model of sagacious and powerful penetration, that the exposition and the explication of the ideas and of the work are always of an admirable lucidity, breadth of com-

prehension and vigor of expression. M. Faguet has studied successively in their most famous representatives, the four periods of our modern literature; he has devoted, in addition, two volumes to the "*Politiques et Moralistes du dix-neuvième siècle.*" His works then form, up to the present, not exactly a history of our literature, but rather, if I may use this expression, a *Museum*. He seems to me preëminently a portrait painter, a deep portrait painter, who instead of painting visages and vestments, paints minds and souls. His works form a gallery of rare masterpieces, where each "canvas" engages your attention both by the importance of the subject and by the authority of the artist, a doubly suggestive picture, so clear-cut that it remains forever engraved on the eye of the mind. I find in a curious study by M. Gabriel Séailles on "portrait painting," a conclusion which I can not refrain from introducing at this point:—

"I know of nothing so well calculated as portrait painting to instruct us in the true nature of art. Platonic idealism, with its theory of ideas and eternal types, has here no longer even an apparent meaning; and realism, in the narrow sense of the word, is no less chimerical. Art lies between the two. It seeks neither the abstract which never exists, nor the real which exists only for a moment. In order to equal nature, art does not express itself as nature does, is not so verbose, but tries to say more than nature by saying it better. Nature is master over time and space, finds a minute for all its whims, has the right to say everything, and uses this right. Nature is not sparing either in accidents or in superfluous details. The artist has fewer forces at his command; but by a certain unity of sentiment he imparts to these forces a single direction. Nature enfeebles its effects by dissipating them, the artist multiplies his by collecting; nature scatters, the artist concentrates."

We have merely to transfer the terms of this definition to the moral study of individuals, to find that they apply, in almost

every particular, to M. Faguet. Like the painter, he discovers the synthesis of the model which poses before him, detaches this, makes us see it, with the result that we are soon indebted to him for a far profounder, completer and truer knowledge of the "faces" before which we tarry with him.

Some will be inclined to think, perhaps, that this method is very circumscribed, that the critic who uses it, contents himself too easily with the renunciation of vast generalizations, that he is a little too ready to give up the noble aspirations and the first conquests of "scientific criticism." But no one will persist in this opinion, who calls to mind the prime importance of so delicate a problem as the relations between the man and the work which he makes his objective. This problem is perhaps the most difficult and at the same time the most important of all those which present themselves to the critic and the historian. This problem dominates all those others which proceed on the assumption that it is solved. And it remains as if ever enveloped in mystery. Can we know other men? Can we, by the acts of their life and the works of their mind, ascend to that invisible source from which these works and acts pour forth? Can we really know how this has come from that? We think that we do in the case of public men who have revealed themselves at their own pleasure, by pen and by word, whose habits, whims, table-talk, witticisms, have all been recorded by contemporaries, whose descendants publish their letters, and even their account-books, when they happen to have them, and respecting whom we have in consequence, multitudinous documents which we are disposed to consider trustworthy. But are not these documents themselves, however slightly we may go astray in the interpretation of them, a source of error? We have already pointed out how little some of these are to be relied on, memoirs especially. And do you believe that the works themselves, and correspondence are much more to be trusted? They are all full of contradictions, give occasion for the most widely divergent interpretations,

and the same "sources" will lead two different historians to diametrically opposite conclusions; for each one will find there equal arguments in favor of the opinion he has formed beforehand, an opinion which depends, when it comes to a final analysis, on the peculiar relations which exist between his personal temperament and the facts submitted for his examination. In no domain is truth so difficult to draw nigh to and to seize. We move forward on a plain which is ever shrouded in the mist; we are deceived at every step. The prosecution of such a work requires the rarest qualities of mind; it is amply sufficient to fill up a lifetime. M. Faguet has divided, has limited this task; and he performs it with a conscientiousness, a probity, a penetration and an unerring analysis which make him one of the surest and most stable of guides. So true is this, that it would be impossible to make any real study of the authors on whom he has written without a very intimate acquaintance with the work which he has devoted to them. And we can not acquaint ourselves with this work without a keen sense of its justness and authority.

I have confined myself in these notes to his "criticism of the past," evidently the most considerable part of his work. But we know that he also constantly judges literary and dramatic works of the day, and in his articles in review and journal reappear the same sureness of judgment, the same qualities of comprehension and analysis. And if occasionally, these qualities seem slightly attenuated in these more popular contributions, the fault lies very frequently in the mediocrity of the subjects. The portrait painter is somewhat dependent on his model, and the critic on his "authors." We can not feel entirely at our ease before a drama that has failed or before an ill-constructed novel.

V

We have confined ourselves, so far, to the consecrated masters of criticism whose works, which are already considerable in bulk, present and preserve a marked unity of purpose. The questions

of method which criticism raises, have not, according to all appearances, proved especially attractive to their younger continuators whose critical tendencies are, in this respect, not always of so pronounced a character. MM. René Doumic, G. Larroumet, Gaston Deschamps, G. Renard, George Pellissier, Henry Béranger, Victor Charbonnel, Henri Pujo, etc. These writers have been developed in a time that is much less favorable to intellectual speculation, in the midst in fact of those "crises" which, for the last seven or eight years, have shaken the country almost without intermission. We find it impossible not to apply to these writers, whatever may be supposed to the contrary, the "theory of environment." Their example demonstrates that, if not always true, this theory is nevertheless true now and then. They have lived in an atmosphere of incessant commotion, in which the moral sense is constantly wounded, in which enormous overthrows and sounding catastrophes raise from year to year the problems of public and of private manners, in which the convulsions of an unsteady democracy take the leading part on the social stage, in which intellectual pursuits have become a phase of modern luxury reserved for a privileged class. Thus literary criticism loses, in their hands, its serenity, its disinterested and "scientific" character, to be employed rather as a weapon of defense and attack. M. G. Renard gives to the series of his articles the significant title, "Critique de Combat;" M. Deschamps calls his, "La Vie et les Livres." All, or nearly all, throw themselves into the fray, more anxious to formulate their own personal opinions as to the course of the world, the tendencies of the democracy, and even the incidents of the moment, than to study, in a sort of intellectual retreat, great works that are permeated with a spirit of tranquility, in the hope of revealing their profound meaning or of discovering in them the hidden laws that control human thought. No one of them, so far as I know, has ever thought of going to Taine for inspiration, or to Hennequin, or even to M. Brunetière's theory of the evolution

of species. Consciously or unconsciously they all tend to action. The circumstances in the midst of which they have been developed impel them to it, often in spite of themselves. They go ever further away from the "Templa Serena;" and it is not hard to foresee that, unless something arrests this development, the questions of method which we have been examining, will be abandoned for a time, and criticism, descending from its heights into the arena of ephemeral discussion, will become little more than a form of polemics.

This is what criticism has already occasionally become in the hands of M. Doumic—a mind that is preëminently brave and resourceful, and also of an admirable uprightness and steadfastness. Doubtless questions of literary history often attract him, and he treats them with the ability that one would expect from his solid erudition, his rare clairvoyance, and his true feeling for tradition and the past in general. But his temperament impels him, first of all, towards questions of the present, with which he wrestles almost always less as a critic than as an ardent and inspired champion. Beneath the writer, he seeks the moral tendencies of the man, and beneath the literary work, the social meaning which it may have. Literature as that blind cult which has been almost a dogma in certain schools, does not impose upon him in the least. He looks on it as an occupation like many another, which he is proud to uplift, and which is worth just exactly what the man who exercises it is worth. "His dream was to make books," he says of Edmond de Goncourt. "This is a taste of which we ought not speak ill, even if it has become much vulgarized in our day. Still we ought not to go so far as to believe that the mere choosing of this vocation gives us the right to put ourselves outside of and above the rest of mankind." And even toward writers of acknowledged talent whom he himself recognizes and certainly enjoys with the literary part of the "self," he preserves the whole of his liberty. After having paid them the tribute of admiration which their talent demands, he judges their action,

their rôle ; he examines and discusses the far-off consequences of their work, and pronounces on its relative value in the play of human things. Such an article as that on M. Anatole France in the second series of the “ Études sur la Littérature Française,” is especially characteristic of this point of view. The man of letters is won, the moralist resists ; and we do not know which carries it over the other, when we read words like these : “ Faithful to the tradition which, for two centuries, has joined licentiousness of manners to licentiousness of thought, M. France has filled his novels to over-flowing with incongruous and obscene episodes. We can not imagine a more delicate task for a delicately minded man of letters ; the success of the enterprise completes, in the happiest fashion in the world, the physiognomy of the writer.” These words cut two ways : the artist is not willing to disown the artist ; the moralist insinuates his blame. As for the rest, the thought of M. Doumic appears in greater force, when instead of trying to interpret an isolated writer, he endeavors to set forth in clear relief the meaning of some general movement, of a collection of facts. The leading ideas by which he is possessed, appear then much more clearly, and his strong convictions—for he has convictions—are revealed in much greater amplitude. Let one read his vigorous article on the Statues of Paris. This is a masterpiece of irony and of close reasoning ; it is a whole programme, a sort of historical, political and social *credo* from which one might differ, it is true, but the nobility and seriousness of which, no one can deny. The man who wrote these strong pages is not first of all a “ man of letters,” though immersed in letters and penetrated even to the marrow by the essentially *literary* culture which the University of France disseminates. He is, in the highest degree, what I shall call a *social mind*. I mean by this, that his care is for the future, for the welfare of the race, for the true progress of society, and that he calculates the influences which direct this progress, which further or hinder it. He is willing, indeed, in his leisure moments, to con-

template "the things of earth from the point of view of Sirius, with absolute disinterestedness." But this philosophical pleasure does not enchain him very long. "But shall we be able," he asks, "to carry this disinterestedness to such an extreme, that we shall divest ourselves of all interest in the fair name of our native land, in the future of society, in the education of our youth?" Those problems which are of practical interest, possess in the eyes of M. Doumic far more reality and importance than philosophical pleasures; and it is to showing the gravity of these problems, to advocating this or that solution of them, to following out their far-reaching consequences for good or ill, that he consecrates his gifts as a writer, his keen logic, his concentrated zeal, and that "philosophical irony" which he possesses almost to superfluity, but which he knows so well how to use where it is needed. And so it is, that though his work does not possess as yet the range of those critics who have until now engaged our attention, it impresses us most forcibly by reason of its solidity and unity. Critic, journalist, professor, lecturer, M. Doumic is a most complete and original individuality. No one has ever broken more energetically than he with that "bilateral" criticism which the skepticism of M. France and the dilettanteism of M. Lemaître had inaugurated. He is the kind of writer to whom I once gave a name which has often been repeated since: he is "un positif." I do not know whether he is religious in the strict sense of the word; but, at any rate, he gives the claims of the soul precedence over mere pleasures of the intellect; he looks upon literature as a vital force whose effects he reserves the right to measure and to judge. Hence, that severity which often seems excessive, which occasionally reminds us too strongly of the foregone conclusion. But when a "judgment" pronounced by M. Doumic on some writer whose talent he refuses to recognize, bewilders or shocks you, you can count on it, that this judgment has its origin in some unity of opinion, some general view, the defence of which seems to him of paramount necessity. I do not believe that such

a tendency, just at this moment, is a weakness. There is a time for all things, as the wise say. For twenty years, we have amused ourselves immensely with the mere play of ideas. Perhaps too much; and it is perfectly legitimate that serious minds that are disturbed about the future, should interrupt this play which is not without its peril. M. Doumic seems to have taken upon himself this rôle. He fills it with an energy, a good faith and a steadfastness which his enemies themselves recognize, and which have gradually obtained for him no mean degree of authority.

M. Gaston Deschamps appears, though with less dogmatism, to have chosen a kindred vocation. On succeeding, several years ago, to the office in the columns of the "Temps" from which M. Anatole France had just retired, he summed up, in the lines that follow, the programme which he intended to adopt:—

"I could wish that the professional habit of studying men who write never caused us to lose sight of those who read, and personally, that my solicitude about that which passes in the mind of writers never constrained me to forget the thoughts and sentiments that are stirring in the tumultuous soul of the masses. In the democracy which is organizing around us, which we perceive as yet only in outline, the relations between literature and manners must continue to grow ever closer and closer. The effort which generous idealists have made to put every Frenchman in a condition to read and to understand a printed page, will yield us in the end good results or bad; and this depends entirely on those who hold a pen.

"To seek in the environment of books that movement in our social life which has caused them to spring up, and which they in their turn are destined to modify, to detect in the results of the inquest instituted by writers some indication as to the moral and intellectual status of our country, to associate the analysis of books with an equally earnest observation of daily events, to make literary history a contribution to our knowledge of contemporary society—this is an attractive, and doubtless over-

bold, but not a chimerical programme. In any event, the scheme is worth the trouble of being tried."

And in fact, M. Deschamps applies himself, and often with success, to the task of pointing out the relations to the general movements of the national life, of that literature of which certain men of the preceding generation persisted in making so narrow and restricted a worship. Aesthetic questions do not seem to interest him on their own merits, and just as little, the "psychology" of authors. His point of view is, first of all, social and political. Not content merely to review new books, he is constantly recommending and supporting the ideas which are dear to him, especially colonization of which he is an ardent apostle. Very eager as he is for knowledge at first hand of "life," he observes this in all of its manifestations; and this rather new tendency in the sphere of literary criticism gives to his articles a singularly unique and genuine flavor.

This union of life and letters is, moreover, one of the favorite ideas in certain groups of young people, especially in that group from which "*L'Art et la Vie*" emanated. This was the title and the programme of the courageous review which this circle edited collectively and supported by courses of lectures, several of which attracted the public. The review has ceased to appear, and the group is now about dispersed; but some of its members are still to be found in publications of wider circulation, in which they continue with ripened faculties the same work. I shall mention among them, M. Victor Charbonnel, the eloquent champion of the "Congress of Religions;" M. Henry Bérenger, who is guilty at times of a certain polemical violence, but who possesses a very marked feeling for contemporary society, and is strongly attracted by those complex problems which confront us with the accession of the democracy; M. Maurice Pujo, a fascinating and profound idealist whose originality is full of a rare charm; M. Firmin Roz, a careful, penetrating and sagacious spirit, etc.

I have come to the end of this study which leaves in the shadow so many names that ought to have been mentioned, so many works that ought to have been considered. My purpose was a more restricted one, to give an idea in outline of the present status of French criticism, to place before the reader its general tendencies; and I have been under the necessity of passing over in silence many individual, or isolated efforts, which my plan excluded. Some of these, however, are of high rank, and that the reader may realize the true significance of these gaps, I have only to recall the beautiful "*Essais de psychologie contemporaine*" by M. Paul Bourget; the admirable articles of M. E. M. de Vogüé, especially those which he brought together under the title of "*Roman Russe*," the publication of which is one of the dates in contemporary literature; the great works in the history of literature by M. Lanson, so conscientious and drawn so directly from the sources; the moral studies of M. Paul Desjardins, whose name has unfortunately almost disappeared from the press; the faithful criticism of M. George Pellissier, who has succeeded in condensing into a single volume all that is essential in the intellectual history of our century—and many others. For the sake of completeness, I ought, perhaps, to have touched on the acrid and violent criticism that prevails in the "*Jeunes Revues*," perhaps even to have noticed the polemics of the diurnal press, to have winnowed out the part that pertains to literary ideas in these passionate discussions that are protracted from day to day. But nothing is more difficult to embrace at a single glance than the varied whole, in all its ramifications, of one of the "compartments" of modern thought. And criticism is, perhaps, just that one of these "compartments" which lends itself the most easily to variety. Is it not obliged to reflect all the others? Ought not the critic to examine the ideas of each writer at the same time that he sets forth his own? Whatever may be the future of the interesting efforts that have been made to approach this "species" to the historical and

natural sciences, we shall have no difficulty in recognizing the fact, that these efforts have prodigiously enlarged its scope. Certain authors still affect to speak of the critic with disdain. They are wrong. Critics have in their turn become creators, at least in this sense, that their order of work leaves them free to manifest and express their own individuality. They are forces to be reckoned with by the same right as novelists or dramatists; and in proportion as that imaginative faculty which formerly assured a preponderance of "poets," in the etymological sense of the word, diminishes, their species increases in importance, in suppleness, in affluence. They profit by the decay of spontaneity and of synthesis, by the triumphs of analysis and reflection. So that a lover of paradoxes might conclude by saying:—

If the theory of the evolution of species is a true theory, literary criticism is that species which will in the end become the heir of all the others; with the singular result that criticism will blossom out in all of its splendor—when there is no more literature.



THE INFLUENCE OF THE SUN UPON THE FORMATION OF THE EARTH'S SURFACE

NATHANIEL S. SHALER, S. D.,
Harvard University.



HE modern development of natural science has led to so great an accumulation of knowledge that it is ever becoming more and more necessary to divide the store into two distinct parts: the one containing the knowledge which may be reckoned as strictly professional in its nature, the other that of more general significance and, because of that generality, having value and interest to intelligent people who are without special knowledge of the matter. The trained expert in any inquiry is, by the state of mind which his work induces, necessarily brought into a close and affectionate relation to all the details of the field which he is cultivating. So long as he devotes himself to his researches, he is not likely to find the leisure or the desire to trace the relations of the facts with which he deals to those belonging in other branches of learning. He is almost, perforce, unmindful of all that relates to the application of his results to the questions which most concern the body of cultivated folk, who can hope to comprehend no more than the outlines of science.

In presenting the results of scientific inquiries so that they may be helpful to those who are not trained in seeking them for themselves, it is necessary to do the task in a manner that

is not, in the best sense of the word, scientific. Full proof of the facts which are adduced can rarely be given. Even references to authorities are commonly unfit. Much has to be boldly stated, or at best illustrated by reference to some part of the very limited range of phenomena which lie in the field of common experience. Thus, in the following synoptic account of the processes by which the earth's surface has come to the existing form, the reader will note that many things are stated that are not supported by evidence. So far as possible, these are limited to such as are not controverted by authorities, or, if so questioned, the conflict is noted. Yet, the presentation should, as a whole, be taken rather as a statement of opinions held by noted men, than as a technical view of the many and broad questions which are discussed.

STATEMENT OF PROBLEM

It may be presumed that every intelligent person desires to form a conception as to the way in which this earth has come to have its present aspect. In the time of our forefathers, the answer to this inquiry was simple. It was that this sphere, along with all else, was commanded to be what it is. Beyond that yesterday of creation, it was not possible for inquiry to go. If it endeavored to do so, it was to encounter peril. Now that men face an infinite perspective of time and events, they instinctively demand some account of how they themselves, and the great household in which they dwell, have come to be what they are. First of all, in this ample questioning, comes the inquiry as to the ways in which that planet took its shape so as to become the fit abode of life,—an abode so good and nurturing that after ages of endeavor this life attained to the state of man. It is on the judgment as to the history of this sphere in its relation to sentient life that the opinion of mankind as to the nature of the control which rules them, is to be formed. The depths of the heavens, or that other infinite of atomic relations, may stir their imaginations; but those concepts of Nature which are to shape their

lives will surely come from the ways in which they regard their own bodies and their relations to the part of the world that most nearly affects their careers. To make these concepts clear,—to show what we can of dignity and largeness in them,—is clearly a task of first importance. It hardly needs to be said that it is one of some difficulty, for much must needs be understood before it is possible to convey to the mind any adequate idea as to the nature of the earth work. If we had indeed to await a thorough training in Astronomy, Physics, Chemistry and the biologic sciences as a basis for the understanding, we might well despair of attaining to it. Fortunately, however, the greater part of this knowledge which is required for understanding the geologic problems with which we have to deal, is gained in that practical yet truly scientific experience with the world about us such as comes to all men. The little that is somewhat recondite is easily attained,—is in fact commonly learned in the higher grades of our public schools. The small remainder may well be taken, as men are so well accustomed to take their knowledge, on the judgment of those who have devoted their lives to its acquisition. It is most fortunate that a large and enlarging view as to the history of the earth is free to all intelligent men.

ORIGIN OF GEOLOGICAL FORCES

Although there is still ample room for debate as to the details of the process by which the stellar realm took its present shape, it is no longer to be doubted that the later steps of this process led through the concentration into the great spheres, the suns and their attendant orders, of matter which was previously diffused in the state of vapor or dust through the space those orbs now occupy. That this so-called nebular hypothesis is a true view, is shown by many facts, particularly by the evidence, that while in the system of our own sun the concentration has gone so far that little if any of the diffused matter is left in its original vapor, or dust-like form, other parts of the heavens, far away from our own, disclose to the telescope a vast array of so-called nebulae, many of which are vaporous

in their nature and apparently in a process of concentration into spheres in a manner essentially like that which we suppose to have taken place in our own solar system. Moreover, the rings which encompass the planet Saturn serve us as a monument as to the verity of the nebular theory, for, while it is easily explained by that view how remnants of the matter of that planet were left behind as the mass shrunk together in the process of passing from the finely divided state to that of a very hot mass, there appears to be no other way of accounting for their formation.

Supposing, as we may well do, that the materials of one solar system were all, at one time in the past, diffused throughout a space which extended beyond the orbit of Neptune, the outermost of the planets as yet discovered, it is easy to see that the attraction of gravitation, or the action of every particle of meteor upon every other, serving to bring them towards the common center, would operate in at least two important ways. The process of concentration would lead to the development of heat, it would also bring about the revolution of the mass of condensing vapor on its centre. The consequences of these actions are momentous. It is, therefore, important that their causes be here understood. As for the first, let us note the tolerably familiar fact that whenever we compress any material, as for instance, air, so that it occupies less space than it did before, the temperature rises conversely. When such compressed gas is allowed to expand, it rapidly cools until it regains its original temperature. This is well shown in the use of compressed air to drive mining and other machinery. The cylinders wherein that air is squeezed together become very much heated, so also the pipes by which it is conveyed away, while in the places where the air is allowed to expand, it so far cools that it may form ice about the vent. We thus see that the quantity of the form of energy which may appear as *heat* in a mass of matter, may be the same and yet the temperature be low, if its particles be far apart, and high, if they be brought nearer together. At first sight, it may seem that gravitation alone would not be

sufficient to develop a great amount of heat, but reckoning shows that the falling in from the outer spaces of the matter which we know to be in our solar system to the centre, where it is now gathered, would make evident, or, as we may for convenience say, *produce*, many times the heat that now is stored in the sun, in the depths of the earth, or in the greater planets, such as Jupiter and Saturn, which appear to be still hot, even at their surfaces. It has been enough to lift all this concentrated matter from some hundreds of degrees below 0° Fahrenheit to a temperature of, it may be, some hundred thousand degrees, such as probably exists in the sun, and to maintain this heat for many million years, though it has ever been flowing away from the sun and the lesser spheres since the process of concentration began. As we shall hereafter see, it is this heat, derived from the concentrated portion of matter in the sun, which is the mainspring of all geologic action. Practically all the work of any kind that has been done on the earth or other spheres in space, is brought about by it or by the light which accompanies it.

There is a secondary group of actions due to the action of gravitation in the process of concentration of the star vapor, or dust, which has determined the shapes and motions of the bodies in the solar system. First of these, we should note, is the revolution of the mass as a consequence of the falling together of its particles. The reasons for these spinning and circling motions which appear to be characteristic of the heaving spheres, are better discerned if we notice that it is of universal occurrence wherever gases or fluids move in towards the common centre. Thus water, flowing through an aperture, as the exit of a wash-bowl, always spins around in the manner of a whirlpool, the turn may be to the right or the left: we may by force change the direction, —but it always begins to spin as soon as the movement towards the centre is established. So, too, the air which rushes to the up-going current of a sand whirl, a tornado, a cyclone or a hurricane, always moves in the spinning way. These actions, as well as

the larger movements of the great spheres of star vapor, appear to be due to a very simple and evident cause, which may be thus set forth :

Let us suppose that every particle on its way to the centre to which it is impelled, should be free to move on a perfectly straight line. In that case there would be no spinning movement set up. But if any one of these particles departed from the straight line, it would start a turning process which would be quickly communicated to every other particle, and would rapidly increase in speed, as we observe it to do in the smaller instances above mentioned. The reason for this is, that when the bit of matter, the atom or molecule of water, air or vapor, departs from the straight way, it presses in the measure of its departure on the neighbors next the side towards which it turns, thus applying some part of the energy of its movement towards the centre to turning their paths in conformity with its own. This action will quickly be transmitted from one to another so that all the particles of the mass will have their paths curved in the same direction. It is not so easy to see why a mass of particles, once set whirling, will increase the intensity of the turning motion to a point of high velocity until, indeed, it attains a definite, ultimate point, when certain influences serve to arrest greater increase in the speed. Yet the fact is observable, in a small way, in the manner of spinning water or air. From these examples, the reader will be prepared to accept the fact that concentrating star matter spins because its particles are not able to pursue straight paths to the center of gravitation. It is not improbable that the attraction which other solar systems exercised on the matter of our own, made all its particles deflect in one direction and thus established the process of whirling mentioned. Theoretically, however, the deflection of any one of them while the others were unmoved, or of a majority of one out of the whole concourse, would have been sufficient in the course of time to have set the whole in rotation.

Assuming, as is most likely, that the original shape of the nebulous matter from which our solar system has been made, was spherical, or somewhere near that shape, we may conclude that the effect of the rotation of the mass would be to bring it to a flattened or disc-like form. This may be illustrated by many simple experiments, as by dropping oil into a mixture of water and lighter fluids so that the oil hangs as a sphere in the mixture. Then, by passing a rod which is gently rotated through the sphere so that it revolves, it may be observed to flatten to a disc-like form. The movements of the arms of the governor of a steam engine illustrate the same principle. From time to time as this great, nebulous disc at once contracted and flattened, it set off a ring of its substance on its outer margin. Just how or why such rings were formed, is not yet clear, but that they did form, is shown obscurely by certain of the nebulae that the great telescopes reveal, and most clearly, as before observed, by the rings of Saturn which, we may well believe, were formed when that planet, in a small way, repeated the processes that the greater mass from which it parted, went through. As the great rings became successively detached from the remainder of the nebulous mass left behind in the process of contraction, they in time became broken; it may have been by the passage of meteors through them. Such a break would necessarily lead to a gathering of the broken circle of vapor upon a centre about midway between the point where the circle was parted. The result being the formation of a sphere,—an independent centre of development which would pass through the same general course of development as the parent mass. Its materials would be drawn to the centre, and successive rings would be formed and broken, each producing a small planetoid body,—or moon—related to the sphere whence it came as that sphere is to the sun. As if to attest the worth of this view, one such ring, or group of rings, remains unbroken about the planet Saturn. Such, in general, is the explanation which the nebular hypothesis gives as to the forms and relations of the bodies of our solar

system. There are many points for controversy, many obstacles which will long be matter for debate, but the greater number of its teachings are not likely to be shaken.

When the matter of a planetary sphere such as our earth becomes separated from the original body, to form a planet, it naturally continues to move around the sun in the path which it originally followed. As these separated parts fall towards the new centre of gravitation they induce a whirling of the body in the manner before described. So it comes about that all the spheres formed in this process of contraction tend to spin on their axes. In a way difficult to explain, the attraction of each of these bodies on the other tends to stop their rotating movement. Thus, in the case of the moon, which doubtless at first turned on its axis as the earth does, the attraction of the larger sphere brought it to rest. In turn, the moon, and in a less manner the sun, by the mechanism of the tides, are steadfastly but very slowly working to bring our planet to a like unhappy state of repose,—one in which there will be no days as we now know them. But for a time indeed, we may say characteristically, these spheres of the solar families all spin upon their axes of rotation. When we come to consider the ways in which solar energy is applied to geological work, this feature of axial rotation will be seen to be of the utmost importance.

As soon as the planet enters on its independent life by its separation from the parent body, the sun or undivided central mass of the solar system, a peculiar relation is established. Each of these bodies sends to the other heat and light as well as gravitative impulse. As the planets are always relatively small in comparison with the sun, the share of these contributions from one body to the other is extremely diverse. Even when hottest, at the time when the process of concentration had brought the earth to the state of a fiery, molten mass, the share of such energy which it sent to the sun was quite insignificant, and its gravitative impulse must have been even as trifling in effect. So too

the heat of the sun upon the earth must have been, for the long ages during which our planet was cooling down to the condition under which its surface became solid, of no value save that it served, in some small measure, to prolong the period of refrigeration,—to delay the time when the sun's rays could begin to do their great work in shaping our planet.

The geological record evidently does not go back to anywhere near the time at which the cooling of the earth had brought its surface to the temperature where the sun's rays began to have their share in terrestrial affairs which they now hold. By fair inferences, however, aided by some suggestions of a limited sort which we gain from a study of the moon and other heavenly bodies, we are brought to the conclusion that a very long time elapsed, certainly many million years, perhaps hundreds of millions, before the separated mass of the earth cooled down to the point where a permanent crust was formed on the heated interior. It is altogether probable that the crust was not made until the earth, still heated in its depths to a temperature of tens of thousands of degrees, as it most likely still is, had become throughout its mass essentially solid. In a very short time after the formation of this permanent crust,—geologically speaking, in a day,—the effect of the internal heat of the planet on the temperature of its surface must, owing to the low conductivity of the rocks, have become very slight,—perhaps not greater than at present, when the heat from below is of such little account that if all below the soil were turned into ice, no change in climate would be brought about.

The alterations in the relation of earth and sun which came about when the internal heat of the planet ceased to effect the surface, are not at once evident. It is indeed a very complicated matter, for there occurred one of the revolutionary periods in natural processes, when, in a moment, in a sense of perfectly continuous actions, we find an utter change of conditions brought about. To comprehend the new situation, we must have in mind certain facts which, though potent, are commonly overlooked.

The first of these, and the clearest, is that a great deal of work is now doing day by day on the surface of the earth, and that like work has been in process for many million years in the past of this sphere. The air is constantly in motion, applying a measure of power many hundred times as great as all the steam engines in use could afford. A body of water equal to a sheet not less than three feet in thickness over the area of the earth's surface, is lifted to an average height of a mile or more to drop back upon the seas or to find its way in rivers and glaciers to the ocean level, wearing the lands as it goes. By this system of the rains, there is each year worn from the lands, rock materials certainly not less than five cubic miles in bulk. This is carried far: a rough computation shows that the transportation probably exceeds on the average more than a thousand miles. Besides these great operations by means of the winds and rains, there are very many kinds of minor work due to the same access of celestial energy to our planet. Thus, all the forces of life in animals and plants, that which brings their material parts together, that which is involved in their growth or their activities of every kind,—have their source in the sun. This is as true of man as of other creatures. The bodily power which impels the pen that writes these words, flowed from the same central spring of the sun,—was transformed by the machinery created by the celestial energy to food and thence to mental and muscular energy. The only measurable work done on the surface of the earth which is not of solar origin, is to be found in earthquakes, volcanoes, the tides of the seas, and the blows inflicted by the fall of meteors. Even these exceptional actions, (save the last mentioned), are to a great extent qualified by the sun's heat. Thus, the tides are made possible by the fluid state of the great waters, which would be frozen to their deepest parts with the temperature of several hundred degrees below zero that would exist, but for the solar influence.

Accepting the view, that practically all the work done on the

surface of the earth,—all indeed that has made its life what it is, —depends upon solar energy, let us see the conditions that control the access of this heat to the sphere, and the modes in which it operated. The easiest way to set about this inquiry is by comparing the state of the moon with that of the earth. In our satellite, we have the nearest kinsman of our own sphere. They parted company not long ago in the history of the solar system. They are probably, in the main, composed of like materials. They are at practically the same distance from the sun, so that nearly like amounts of light and heat come to equal areas of their surfaces. There, however, the likeness ends, for while on the earth the solar energy excites an amazing amount of physical and organic activity, on the moon it has not and never has had any such effect, nor, indeed, any traceable influence on its affairs. The telescope enables us to discern the general form of the surface of our satellite, or at least of the more than half of it that we may observe, far more accurately than we do that of our earth. A study of this surface shows us that it has never, in any part, been exposed to the action of streams, but has been shaped altogether by the boiling process which took place as the sphere cooled from its ancient condition of igneous fluidity. Since that time, which is most likely to be reckoned at several hundred million years, the face of the moon has undergone practically no change, while that of the earth has again and again been revolutionized by the solar forces. To what is due this contrast,—the sharpest we observe in the realm about us?

There is no doubt that the difference in the effect of solar energy on these two neighboring spheres, is immediately due to the fact, that while the earth has air and water, the moon entirely lacks these materials. It is to air and water that we owe the retention of the solar heat and the various modes of action by which it does its complicated work. First, as to the retention of the heat on the sphere, we should remember that no sooner does a body receive heat than it begins to give it forth, and that

the incoming and outgoing processes proceed together. The temperature which the body acquires, is determined by the rate at which these two actions go on. If the outward movement is as swift as the inward, the body will not heat at all. Such appears to be essentially the case with the moon. The best observations go to show that even with half a month of sunshine, unhindered by air or cloud, its bare rock surface, which on the earth would be heated to near a thousand degrees Fahrenheit, and which would glow like red-hot iron, does not become thus heated, if indeed it acquires any temperature at all. It is easy to see how otherwise it is with the air-wrapped earth. Through this air the sun's heat penetrates with relative ease, so that it is reckoned that enough comes in each day to melt somewhere near eight thousand cubic miles of ice. As on the moon, this heat seeks at once to fly back whence it came, but to this process of radiation the aerial envelope opposes a certain measure of resistance, so that a portion of the energy, or heat, is for a time retained on and just beneath the surface. What proportion of the total income of the heat is thus hindered in going out, is not certain; but it is clear, that, slight as it is, if the tropics were deprived of the supply for as much as ten days, the lands and seas would become deeply frozen. The retaining process is due mainly to the vapor of water which is contained in the air, and without which the air would be in this regard ineffective.

The immediate result of the action of the atmosphere and the water it contains on the radiation of heat, is that the surface of the earth, (the water and the lands), acquires a temperature which is normally above that of the air which wraps them. This is easily seen by placing the hand on the surface of a stone or of the earth which has been long in the bright sun. This heated surface in turn warms the air which is next to it. Thus warmed, the air becomes able to take up and retain the vapor of water, and it moreover tends, because of its heat and the consequent expansion, to rise to higher levels, giving place to the colder air

that lies high above the earth. On these two results, which are brought about by the conditions of earth and air, movements of importance depend. We will first trace the effects due to the upward movement of the air, and afterwards the actions which arise from its capacity for water vapor, which is likewise given by the process of warming.

If on a still, hot, sunshiny day we observe the air on any broad level surface where there is no thick coating of vegetation to send the heat from the ground, we shall find that the earth is very warm, often to a degree that makes it painful to the feet. With a thermometer, we may note that the air for some distance above the surface has a temperature of more than 100° Fahrenheit. A registering instrument sent up with a balloon to a height of a mile will probably show that at the same time the higher air is near the freezing point. In this condition, the lower air is very energetically impelled to rise, while the higher seeks its way downward. For a while, the resistance, due to the weight of the still masses of the atmosphere, to the inertia, prevents any movement. In course of time, however, some chance determines a place of upward movement. It may be a tree or a stone rising a few feet above the level, so that there is a little more tendency upward at that point, which starts the uprush. As soon as the movement begins, the air is drawn into the ærial chimney as it is to the like shaft over a fire; spinning as it goes, it rushes upward, causing the familiar sand whirls such as are common, in a small way, in city streets and squares and in a larger form in natural deserts. What is done in a small way in the hot fields and streets in carrying the air which has been heated in the course of a day, from the surface to a few hundred feet in height, is on a larger scale effected in the atmosphere as a whole by greater whirlwind storms, which are often several hundred miles in diameter, carrying the lower air upwards for weeks in succession through the same shaft, as this shaft moves across the lands and seas. These whirl-storms appear in the

relatively gentle cyclones, or ordinary disturbances, such as move across North America, in the fierce tornadoes which sometimes occur on their advancing side, and in the hurricanes, or typhoons, which sweep over parts of the tropical seas.

Although the greater part of the air is more or less set in motion by the process of whirl-storms, the principal source of its movements is to be found in the kindred systems of the trade and counter trade winds. These great and constant winds are due to the difference in the amount of heat which comes to the spherical earth because of the position of the surface in relation to the plane in which the sun's rays journey. In the tropics, where the sun is high each year in the middle of the sky and never far from that position, the amount of heat received by the surface is very much greater than that within the polar circles where it never rises high above the horizon. The result is that the upward straining of the surface air in the tropical belt is so great that a permanently ascending current tends to be formed there, and is so formed, at least over the regions where it lies over the ocean, for there the contraction of the vapor taken from the area of water helps to impel the air upwards. The effect of this is the production of what may be, for illustration, termed a long and wide chimney-like shaft, up which the air steadily ascends. To supply this air, there arises a draft along the surface from higher latitudes which constitutes the trade winds. Except for the rotation of the earth, this air would blow in north and south lines to the point of spinning; but, for the reason, that in moving towards the equator the particles of air are ever coming into regions where the surface, because of the earth's rotation on its axis, is moving with greater speed, the winds turn from the direct line and move to the westward. If the reader will remember that the spinning of the earth carries a particle of air to the eastward at lat. 45 at the rate of about five hundred miles an hour, while at the equator it has to move, if it keeps up with the solid surface, at the rate of about one thousand miles per hour, he will

readily conceive that the particle will lag to the westward as it runs its course to the place where it is to ascend. If this is not clear, let him try the experiment of walking along a straight line drawn from the center to the margin of a railway turntable, while it is rotated. He need hardly make the test, for he will instinctively feel the effect. Besides the groups of movements above explained, the air acquires motion in various other ways. Thus, volcanic explosions, or even great forest fires, may disturb the evenly balanced air and set it in violent movement. These, however, are mere accidents. The energy given to the winds by the sun's heat is applied to the solid earth in several ways. First among these may be placed the indirect effect due to the motion of the ocean waters in waves and currents. The action of waves is in general a matter of common knowledge. The most important point to observe is, that the waves of the sea, the result of the friction of the air on the water, store in their movements energy which has been gathered, it may be, on a field of waters a thousand miles wide. This energy is applied, at a stroke, against the land with such effect that even the firmer rocks may be rapidly cut away, their waste being scattered afar by the currents which sweep along the shore, or by the undertow which sets seaward along the bottom in times of heavy storms. As waves of sufficient size to be effective in this work strike along some hundred thousand miles of coast, their effect is, in a geologically rapid manner, to wear down the lands. That the lands have always remained, despite this evidently destructive process, is due to the fact that they are steadfastly, though variably, uplifted by the internal forces of the earth.

From the point of view of the highest accomplishments of the earth, its organic life, the most important effect of the trade winds is the development of ocean currents. These, like the waves, are the result of the friction of the air; but while the waves form and wear out, the currents produced by the trade winds are as steadfast as those permanent drafts. In the gulf stream and the

like currents which flow polewards from the tropical seas, we have the return of the water which was driven towards the equator by the trade winds. In these great rivers of the sea, we find a drainage system that conveys not only water but heat. Through them is taken from the tropics to high latitudes enough heat to lower the temperature about the equator by the amount of from ten to twenty degrees, thus keeping the climate of that realm in a fit state for the uses of the higher life. At the same time, this heat, withdrawn from the over-sunned realm, is delivered to that which has an insufficient direct supply. It has been well reckoned by Dr. Croll, that the region within the arctic circle receives more warmth from the gulf stream than comes to it immediately from the sun. It is well known, that but for the warming influence of that stream, the northern half of Europe would be unfit for the uses of civilized men. Geologists are now looking to changes in the courses of the ocean streams, those moving from the tropics and the return currents from high latitudes, for an explanation of the alteration of elements in former geological ages. With each of the many modifications in the outlines of lands and oceans, the positions of these conveyors of temperature have been altered, with great consequence to the climate and to the organic life of the regions thus affected.

It is in the action of the air in receiving, carrying, and depositing water that we find its greatest effects in distributing and applying solar energy. Each year, water is evaporated from the earth's surface, probably amounting to a mass some feet in depth: it may average as much as three feet. Much of this falls back into the sea, producing no geological consequences, but a large share of it is carried by the winds to the lands, and there deposited as rain or snow. Coming upon the land, this water enters upon a singularly wide field of activities. It affords the basis of all the land life, plants and animals being essentially water engines which are driven by solar energy. By its effect on the hard crust of the earth, it produces the comminuted rock which

is the essential element of the soils, without which the land plants could not obtain access to the mineral substances they require, and which are demanded by the animals that feed upon them. Thus, on this action, all the higher organisms absolutely depend for their nurture. Moreover, the maintenance of the soil is effected by the action of the rain in continually removing the detrital matter by abrasion or solution. A soil that did not wear away would in time become unfit for the uses of plants. It is essential that it should be swept off in due season. So well does the system of the rains accomplish this work, that the soil is adapted, in an admirable way, to the needs of plants and of the animals dependent on vegetation. It is only in the unkindly hands of man that this soil becomes unserviceable.

Besides the effect of the rainfall in producing soils, thus applying solar energy in a way to favor the needs of land life, it does a vast work in sculpturing and, in the end, wearing down the lands. This work is, so far as the geographic expression of the earth is concerned, the most important result of solar energy. It is doubtful if the total amount of force involved is greater than that applied by the waves; but it is much more effectively adjusted to the work of attacking the hard crust of the earth, for the reason that gravitation coöperates in the action in a measure that it does not in the work of the surges. Falling upon the land in high districts, say at a level of five thousand feet above the sea, a pound of water has by its position a possible or potential energy termed five thousand foot pounds, or enough to lift two and a half tons to the height of one foot. This it may apply to work on its way to the sea. Much of this store of force is wasted on its own twistings and turnings, but much is well and effectively applied in wearing the rocks with which it comes in contact, while it is coursing on the surface, or creeping in the under earth. At every stage of this work of land water, except where it moves under ground, it is resisted by the vegetation, which opposes its mantle of roots to the lesser streams and its tangle on the banks, to those

which have managed to cut through the protective covering. Thus the plants, the creatures of the rain, effectively hinder its assault on the soil in which they feed. The measure of their efficacy may be judged by comparing the erosion of a plowed field with one of like position which retains its natural mat of vegetation.

So long as water falls in the form of rain, the rate of its actions is extremely varied, ranging from those that shape the lands, to those that nurture the life they bear. Its effects extend also to the sea; for the sediments forming on its flow, and the many substances contained in its waters, that go to sustain organic forms, are likewise, for the most part, contributed to the deep by the rivers. When, however, the clouds send down snow, and this frozen water is aggregated into glaciers, the work done, though intense, is very limited in range, being confined to the corrosion of rocks and the conveyance of the waste to the margin of the ice sheets. Because of its semi-solid nature, ice moves very slowly; so that the water, which, in its fluid state, requires but a few feet in width of channel to drain away the rainfall of a valley, as ice,—spreads out its whole width when it takes the form of a glacier. Moreover, the glacial method of discharge applies nearly all the energy of the position of the water to the mechanical erosion of the rocks, so that, while trodden by the ice, they are likely to wear away with many times the speed that occurs when they are acted on by the streams.

It is profitable to consider the great revolution which is brought about in the mode of applying solar energy, when from its fluid state, water passes into the solid form of the glacier. The difference in the temperature which determines the passage from one of these states to the other, is infinitesimal; while the consequences of the change are, so to speak, infinite. They make the difference between the fruitful earth and the absolute desert of an ice-mantled land. All through the system of Nature we find such sudden changes in the effects of actions which, measured in terms

such as the physicist uses, show little variation ; but in their consequences, they are of inexpressible importance.

While the sun is pouring forth its vast tide of energy into space, a quantity so great that the tiny dot of the earth's surface receives enough in the form of heat to melt about eight thousand cubic miles of ice each day, the earth is also sending out into space a relatively trifling current from the remnant contained in its still hot interior. The amount of this outgoing is, as before remarked, small, trifling indeed, so far as the effect on the temperature of the surface is concerned ; but, as we shall see, momentous in its consequences ; for it keeps the surface in a shape to sustain life by giving the solar energy a chance to do its beneficent work. Although the remnant of heat the earth still retains, is only locally manifested, in a direct way, in hot springs and volcanoes, the effect of its escape, which takes place all over the surface, is continually to reduce the bulk of the sphere. The extent of this shrinkage is not yet certain. It most likely amounts to somewhere near two feet in the diameter of the orb in each thousand years. If this shrinkage took place equally at all depths, the effect on the surface would be *nil*. But, because the deeper parts of the earth are still very hot,—the temperature at the centre being many thousand, (perhaps some tens of thousand), degrees, while the superposed parts are relatively cooled because of their long exposure to the low temperature about them,—the internal mass shrinks much, while the outer parts undergo comparatively little reduction in bulk. The result is that the outer part, termed the crust, is brought into a state of compressive strain. The simplest consequence of this shrinkage of the earth's deeper parts away from its crust, would seem to be that the internal mass would leave the external covering as a shell lying arched above it, much as a nebulous ring is left behind. This, it in a measure tends to do, but the outer part is very heavy, so that even if it were only a half-mile in thickness, the rocks of the most substantial nature would be crushed, if needs

were, to powder, in order to bring the mass down upon its foundations. In fact, the rocks do not crush, but, as much evidence shows, they fold or break into blocks, in such measure as may be required to let them go down upon their shrunken interior.

The depth of the section of the earth's mass, which is forced to pack itself together in order to fit the centre, diminishing by the loss of heat, is not yet known. There is good evidence that it exceeds twenty, and it probably exceeds fifty, miles in depth,—it may be of twice that amount. It is reasonable to suppose that what we call the crust, which may be defined as that part which has to fit itself to the shrunken interior, has no precise limit downward; but, in a way, shades off into the central mass. It may also be noted, that there is pretty certainly no passage from a solid crust to a fluid deeper earth, for the effect of the moon's attraction on the equatorial bulging of the earth shows that the sphere is essentially rigid, probably even more unyielding to strain than the surface rocks. At first sight, this idea of a rigid interior, seems in contradiction to that of an internal heat great enough to melt, or, indeed, to vaporize, any substance on the surface. But when we remember that the effect of the immense pressure, to which the earth's matter is subjected by the outlying mass, is to squeeze the materials together into a solid state, we may well conceive that this tendency towards solidity is greater than that which the heat gives to produce liquidity. Although there is great difficulty in determining the condition of the earth's interior, it seems most likely that if we could test the central cubic foot of the sphere, as it lies, we should find it heated to the temperature of, perhaps, one hundred thousand degrees,—certainly far above any point we can attain in our arts,—yet as solid as steel. If we could bring the central bit of earth to the surface, then relinquish the pressure, it would explode into vapor with more than the energy of gunpowder. In other words, while the earth was once vapor, then, for a time fluid from heat, it is now, though very hot, in a solid state. In this state owing to

the low conducting power of rock, the heat wasted very slowly into space; if it had remained fluid, because currents from below would have continually brought matter to the surface, it would probably have long been cooled down to near the external temperature. As it is, the rigid nature of the terrestrial mass has, as we shall see, kept one of the mainsprings of its physical life in an admirable condition to help the good work of the sun.

We have already noted the fact that one of the immediate and potent effects of the solar heat, is to wear down inequalities of the earth. In time, geologically short, the lands would vanish before this assault. Since it began, there has been a lapse great enough for that result to have been again and again attained. That it has not come about is due to the continued opposition which the crust interposed through the ceaseless movements it undergoes,—movements due, primarily, to the above-described process of contraction. It is from this endless contention between the solar energy applied by the wind, the waves, the rivers, the glaciers, and by organic life, and the heat of terrestrial origin which acts by its loss in the shrinking of the sphere, that the varied shapes of land and sea arise, and are maintained. We shall now glance at some of the details of the complicated process.

The simplest way in which an external crust of a sphere can be made to fit a reduced central part is by wrinkling into ridges and furrows. Such foldings will naturally have a size in some measure proportioned to the thickness of the sheet involved in the movements. As the part of the earth thus affected is several miles thick, we should expect to find the wrinkles very broad. When we look the world over for signs of such elevations and depressions we see at once, in the continental elevations and in the related depressions in which lie the oceans, what appears, in a general way, to represent the results of this corrugating process. It is, however, evident that the continents are not simple features such as would be made by the mere flexing of

the thick central part of the earth. They have high and sharp mountain ridges where the rocks are greatly disturbed; broad areas where the strata lie in a horizontal position; and deep valleys which the streams have cut out; accidents which have greatly changed the character of these broad folds. We must look to the floors of the deeper seas, if we would find the original shapes of the surface, such as were impressed upon it by the greater warpings of the crust.

Although our knowledge of the shape of the sea floor is still incomplete, it is sufficient to show us that there are several broad folds upon it,—low ridges having a height of a mile or two and a width of hundreds of miles. These submarine folds are numerous enough to warrant us in believing that they are a common feature of the crust. They fit so well to the hypothesis, that we are justified in taking them to be the result of the folding of the outer part of the earth on its shrinking interior. Looking over the facts, we see that we can make a tolerably complete series of these folds, from those which still lie in deep water to those that have begun to emerge from the ocean, and take the assault of the solar forces delivered by waves and streams. The history of these elevations appears, from the facts we have in hand, to be, in general, as follows: Beginning in the ocean floor as a low, broad ridge, the fold becomes, in the process of its growth, higher and higher, until its broad crust attains to, or surpasses, the level of the sea. It is often the seat of volcanic eruptions during the period of its uprising, and the material thrown out from the craters is likely to constitute the highest part of its surface, so that the cones frequently are the first parts to come into the air. In the tropical realm, where currents of warm water sweep upon the shallows of the emerging fold, coral reefs of the circular or atoll form are likely to be established, and to aid the upgrowth by the abundant deposits of limestone which they lay down. Like work is done by a host of other marine animals and plants which flourish in shallow seas, but are lacking in deep water.

As will be noted below, there is reason to believe that the movements of the sea floor are, at times, geologically sudden and extensive, so it may well come about that in some rather quick change of level, either of the fold itself or of the ocean level, the nearest land rises above the water to begin its history as a land. Hitherto, it has been protected from all wearing, save that in the time when the water was still very deep, there may have been a little dissolving of the surface material; but henceforth the fold has to maintain a constant battle with the solar forces which tend to wear it down to the plane of the sea. If it be but a small narrow ridge, its history as a land may be limited. During some period when the ocean level chances to be more than usually low, the waves and streams may reduce the surface to such a little height, that with the next elevation of the ocean plane, due to the growth of continents or of the folds which are still submerged, the fold in question may be entirely covered by the sea. When, however, as appears to be generally the case, two or more of these wrinkles of the crust lie adjacent to one another and rise at nearly the same time to the surface, they afford the basis for the growth of a continental area. All the true continents appear to have owed their origin to the simultaneous or closely successive emergence of submarine ridges which have been more or less completely coalesced, in part, perhaps, by the final elevation of the furrows which were originally between the several units, and in part by the filling of the depressions with the detritus swept into the sea by the streams and marine currents. Thus, in the case of North America, there appear to have been more than half a dozen folds that grew upward to the surface in connection. One of these in the region known as the Appalachian Mountains, another in the Labrador district, and yet another, in the district west of Hudson's Bay, the two last named coalescing in the area north of the Great Lakes. The Adirondack Mountains supplied a fourth centre, that of the Ozarks, a fifth, while in the western part of what finally

became the mature continent, there were probably several of these centres of upgrowth. Yet other ancient submarine foldings are visible in the curious, broad ridge known as the "Cincinnati Axis," which extends from central or northern Ohio to near northern Alabáma, as a broad arch which was formed below the sea that occupied the central valley of the continent, in the period of the Lower Silurian. Still a later fold to enter into the system of North America is that of Florida, which, in the geological yesterday, appears to have developed in a rather rapid manner, from the depth of some thousand feet of water. The interesting ridge of the Antilles, which stretches in a continuous line of islands from eastern Cuba to North America, a distance of about one thousand eight hundred miles, seems to have been due to an independent upward growth of the ocean floor. So, too, the remarkable promontory of Yucatan may be a like separately adjusted movement of the bottom of the sea which has been joined to the main mass of the continent. An inspection of the other great lands, those having the structural features of true continents, would show a like combination of several centres of upward growth, more or less separately emerging, to be united, in the later stages of their history, into a true continental mass. We may, therefore, believe that such is the normal process by which continents are formed.

The most puzzling feature in the structure of continents,—one that has long retarded the growth of a sound theory as to their origin,—is found in the mountains which are developed on them. In these ridges, we find the rocks folded into arches of all sizes and shapes, broken by faults into blocks of it may be square miles in area, the disrupted masses shoved this way and that; all the rock work being done in a manner that indicates the action of very powerful compressive strains which locally, and to no very great depth, effect the stratified deposits and those of a crystalline nature that lie beneath them. The difficult question is as to the way in which these localized mountain-building strains are related to the

larger general forces that build the broad, sweeping folds of the continental order. The question is one of much difficulty, but an explanation may be found as follows: The outer part of the earth, which we term the crust, though it is evidently subjected to much less contraction than the deeper lying section, is not entirely exempt from loss of bulk in its lower parts. As the temperature rises, on the average, one degree Fahrenheit for every fifty feet of descent in our mines and wells, it is evident that this superposed portion of the sphere has still a good deal of heat to part with. Though this heat is much less than that of the deeper regions, it is still enough by its loss to bring about some contraction of the rocks lying, say within twenty or thirty miles of the surface. Moreover, there are various processes at work which tend to lessen the quantity of matter in the lower parts of the earth's crust, and to increase that in the upper parts thereof. Thus, we find in nearly all the ancient rock and in much of the newer as well, great numbers of veins and dykes composed of substances which have been taken indirectly, from the lower portions of the central zone, to be laid down in the higher. There is no doubt that these actions bring about a tendency of the upper rocks to bend and break in much the manner in which they do in building mountains. That such is the case, is shown by the fact that in quarries the blocks taken out, if they be large, perceptibly expand in a way that indicates their relief from a compressive strain of many thousand pounds to the square foot. It sometimes occurs, as in Kentucky, that broad surfaces of flat strata will suddenly be disrupted, so that a tiny ridge of a mountainous character, though only a foot or two high, is formed. Such facts, of which there are a great many, show very clearly that the superficial part of the earth, say to the depth of twenty miles or more, is thus commonly under a strain that powerfully compresses the rocks. As these rocks are, despite their apparent rigidity, really very compressible, this strain may long remain unmanifested, being, as it were, stored in the elastic yielding of

the materials, but ready to manifest itself in disruptions, if, by any chance, the beds are unable to move from their horizontal positions.

Conceiving the crust of the earth as almost everywhere tending to disruption in the manner above described, let us consider in what way the place of dislocation would be determined, so that the compressive strains might break or fold the strata. Clearly, such movements would be favored by any action which cut through a part of the level strata, which, by their horizontal position, were restrained from moving. Where a part of these resisting layers was cut through, a place of weakness would be developed, and there the rupturing would have a chance to begin. It is evident that on the surface of a rising continent, the line of the shore would afford such a chance, for there the waves rapidly cut away the rocks, so that, in a geologically short time, a good deal of the crust is removed. To this action, as well as to other influences shortly to be noted, we may attribute the fact, long ago observed, that mountains are normally developed along shore lines. When, by any cause, the land becomes uplifted in mountainous attitudes, the streams soon cut deeply into the rocks over which they course with torrential violence. These channels favor further movements of the beds, so that when mountains are once established, they may provide, by the stream erosion which they induce, a means whereby a certain amount of further growth is brought about.

Although the first steps of mountain building may be determined by the local erosion and consequent weakening of the horizontal, compressed rocks, its subsequent development, as well as the uprising of the continental fold in which the breaking occurs, depends, in part, upon the removal of weight from one place to another, such as is brought about by the process of erosion and the accompanying depositions. Here it is well for the reader to clear away the natural,—indeed inevitable,—first conception of the earth as rigid and firm-set. A wide range of facts shows us

that, so far from being thus firmly planted, the surface of our sphere is in a state of such elastic tension, that it yields to pressure that appears to be but slight. Even sudden changes in the weight of the air, occurring in stormy days, which are indicated in a rise or fall of the mercury of half an inch, may lead to the production of slight earthquakes. There is little doubt, that, if we could cover any large area of, say ten thousand square miles, with a coating of rock to a depth of one thousand feet, or remove from a like surface an equal amount of material, the result would generally be a rise or fall of the affected surface, in a measure roughly proportionate to the cutting or filling respectively. As each extended process of erosion induces not only the removal of weight from one area, but the imposition of a like weight on the floor of some nearby sea, it follows that in general, the action of the solar forces is constantly to favor the upgoing of one area and the down sinking of another that is nearby. It is clear that these conditions tend to make the belt of land near the shore, which is exposed to the attack of waves, now at this level and now at that, as the plane of the ocean rises or falls in incessant changes, the seat of the mountain building processes.

Although, when mountains first begin to form, they are made up of rather simple folds, the continuation of their growth, leads in time, to exceeding complication of structure. The first, usually rather small arches which appear to involve the rocks to only a moderate depth, often come, in time, to be raised on wider ridges, so that we find, as in the Alps and other great mountains, the original arches of the strata uplifted on far more extensive foldings. At the same time, in most such dislocations of strata, the rocks become broken on their planes of fracture by deep rents, termed faults, the adjacent walls of which slip up or down, as well as sideways, so that the blocks of strata included between the disruptions may be moved to miles away from their original positions. Not infrequently, it happens that the principal movements are on fault planes, there being but little bending of the

rocks into up and down archings. Usually, however, these anticlinals and synclinals, as they are termed, are the most evident features in the structure. Where they occur, it often happens that the folds become so compressed that the layers of the strata are pushed against one another, like the folded sheets of paper in a book. Again, a fold, after attaining a great height, may lean over sidewise, until the greater portion of the beds of which it is composed, is again in a nearly horizontal position. In fact, there is hardly any method of twisting or torturing the strata involved in a great mountain system which may not be discovered in the tangle of its structure, where the rocks move like wax.

Although all parts of the great land masses are subjected to the wearing action of the streams or glaciers and waves, it is in the mountain districts that the greater part of the work is done which supplies the sea with the materials for forming new strata,—constructions which are in time likely to be built into the neighboring continent whence the waste came. What part of this waste is not completely dissolved in the water, commonly, for the greater part, comes into possession of the waves and the shore skirting currents which they produce, and by them it is distributed over the bottom, from the shore outwardly, it may be for one or two hundred miles, or even more, from the coast. When the shore of a continent has remained for a considerable geologic time at about the same height, this deposit of detritus is likely to form a broad fringe of shallows such as exists off the eastern coast of North America, where over a wide area to the eastward of the coast, the sea bottom declines, at first very gently, to the depth of about five hundred feet, and thence slopes sharply to the depth of ten thousand feet or more. It is easy to see that it requires no great uprising of this shallow water area, or no great sinking of the sea level, to bring this submarine tableland into the emerged portion of the continent to which it is attached.

We have already been forced to remark incidentally, that the level of the sea, in relation to the lands, is subject to much varia-

tion. In fact, these changes are incessant, and, in a geological sense, very rapid. They are due mainly to the shrinkage of the earth's interior, and the consequent warping of the crust, though they are modified by the ways in which solar energy is applied. The simplest source of change is by the positive uplift of the continental fold or of the part of it where the sea appears to be lowering. This very direct action rarely takes place. What is probably more common, is that the sea floors sink while the lands rise up. In this case the line from the depths of the sea to the central part of the neighboring land, may be compared to the plank of a seesaw with the fulcrum point, or that of no motion, somewhere near the shore. If this point is exactly at the shore, then the motion, up on one side and down on the other, may bring about no change in the level of the water. If the fulcrum point is to the landward of the coast, then, though the continent is as a whole rising, the sea will work inwardly and give the appearance of a rising ocean level. If the neutral point of motion be beneath the ocean, then the shore will be pushed off to seaward, and the land will actually gain in it. It is thus seen that it is not easy to determine by the changes in the portion of the coast lines what movements the land is really undergoing. The effects produced, both by uprising and downsinking, may not be easy to interpret.

Where the changes in the level of the sea are due to alterations in the shape of the bottom of the great basin, the effects are of a simple nature and readily interpretable. If the crust of the earth, after being for a long time strained by the compressive forces which have, so to say, stored a large amount of potential folding in the elasticity of the rocks, suddenly gives way, forming a great protuberance on the bottom, there will inevitably be a rise in the level of the ocean all along the shores. The same effect will take place, if any or all of the continents rise so as to take more room in the waters than they did before. There is good reason to believe that in very recent times, after the close of the last glacial epoch of the northern hemisphere, the ocean

bottom was affected by an uprising of sufficient magnitude to lift its waters to the amount of somewhere between two and three hundred feet. This is shown by the almost universal submergence, or "drowning," of the lower reaches of all the great mines that open into the ocean. In some cases, the drowned channels remain essentially unfilled. Chesapeake and Delaware bays are examples of some score of such flooded stream mouths that exist along the Atlantic coast, and of many hundreds in various lands the world about. In many instances these inundated valleys, which once formed long indentations, have become filled with alluvial deposits, as in the case of the Mississippi River, where the valley, flooded as far up as the junction of the Ohio, has since been filled by silt to the gulf, the delta once again projecting into the sea. At Mobile, the bay is only partly filled with *débris*, as is the case with most of the Atlantic coast rivers. As further evidence of this recent and general rise of the ocean level, we have along the shores of nearly all lands, where the conditions are such as to lead to the discovery of the facts, submerged forests,—the roots of the trees standing as they grew, and often with the wood in such a condition of preservation as to indicate that no very long time has elapsed since they were above.

Although the last movement of the ocean level was apparently due to the rising of a large area of its floor, it is not safe to suppose that to this cause we are to attribute mainly, or in any large measure, the numerous and extensive alterations in the position of the sea in former geologic ages,—such as have again and again brought wide realms, now above and then below the sea. These must be accounted for by supposing that each continental area, and in some, indirectly, each of the coalesced folds that make up a land mass, has its somewhat independent history: it sways up as the strains of the crust impel it. It is possible, indeed, that the formation of other neighboring folds may, at times, lead to a general lowering of one which has long existed. As a whole,

however, the great lands,—all those which have received the name of continents, including Australia,—have probably remained above the sea from the earlier stages of the Paleozoic era, certainly ever since the Carboniferous age. Although, at times, they have swayed, in part, down below the ocean level, these submergences have been most likely compensated by emergences in other parts of their borders, so that the total area above the level of the sea may not have been subjected to great modifications.

The evidence going to show the perpetuity of the continents is in part derived from the fact that we find, at every stage of the geological section of those which are well known, waste from the parts of the area which were evidently exposed to wave and river action, and therefore must have remained above the sea. The best evidence, however, that none of the great lands, despite their alterations of form, have ever been altogether lowered beneath the sea, is afforded by the living beings that tenant them. On each, we find peculiar species which have derived their life from ancestors which have never dwelt in any other part of the world. If at any time the dwelling place of the series of forms which led in the succession of life to such localized species, had been lowered beneath the sea, the chain of inheritance would have been broken.

The perpetuity of the continents appears the more remarkable when we consider for how slight a portion of their total height they rise above the level of the sea. Reckoning the average depth of the ocean at fifteen thousand feet, and the average height of the emerged land at one thousand five hundred feet, we have only about one seventh of the elevation within the air. It is true that the very highest points of land in Asia have an altitude about equal to the greatest depth of the sea; but this may be neglected, as the survival of continental life does not depend on the preservation, as islands, of a few small peaks, but on the maintenance of broad areas of land. It is also to be noted that, except for a very small part of the land surface, perhaps in all, less than the hun-

dredth part thereof, the elevation to which it attains does not surpass the limit in which the protecting mantle of air keeps it fit for the uses of life. If the forces which build the continents up had been even a little more active than those which operate to tear them down, the average height of the lands might have been so great that they would have been unfit for the uses of animals and plants. Of all the manifold adjustments of the earth's machinery to that of the sun which appear to have direct reference to the needs of organic beings, this is perhaps the most admirable in its consequences.

We must now turn to another of the reactions of the earth's interior on its surface: that presented by volcanic action. There has been, and is still, much dispute as to the origin of volcanoes. If, however, we begin an inquiry as to their cause by seeing what these are and how they are distributed, a probable explanation is quickly attained. In nearly, if not quite all instances in which volcanic outbursts have been closely observed, it is evident that the mainspring of the work is to be found in an escape of steam very greatly heated, mingled in small proportions with various other gases, such as might be derived mainly from sea water if it were exposed to very high temperatures, or from various volatilizable materials which exist in the rocks. In ordinary volcanoes, the fact that all their explosions are due to steam is so evident that it is generally taken to be true. It is also well known that steam is completely mingled with the lava when it comes forth, as the gas is with the water from a soda fountain. As to their distribution: all the active volcanoes lie upon the sea floor, where they are evidently so extremely abundant as to be a characteristic of that field; or, if on land, they are never at a distance of more than two hundred and fifty miles from the ocean borders. Moreover, when the seashore directs a field of land volcanoes, it is evident that they tend in a rapid manner to lose their activity.

Noting these features in the nature and position of volcanoes, geologists have generally been of the opinion that in some way

the water from the ocean penetrated through crevices to the depths where greatly heated rocks exist, and that the eruptions were due to the steam thus produced. The difficulty of this view is, that the expulsions should take place at the same point where the water enters the earth, while in fact the lava usually comes forth from a cone much above the bottom of the ocean, and often at a level some miles above that plane. In a word, this theory does violence to the principle of the hydrostatic balance; and therefore must be rejected. Moreover, there is a better chance for water to find its way to the heated interior beneath the land than beneath the sea, for it is evident that mountain building, with its attendant disruptions of the rocks, if not lacking on the ocean floor, is there relatively rare; while on the land, it is common, and as the miner knows, every crevice of the rocks is filled with the fluid. If, indeed, water penetrated from the surface to the sources of eruptions, and thereby induced the volcanic explosions, they would more commonly occur on the continental than on the marine areas.

The simplest explanation of volcanic outbreaks may be set forth as follows :

As is well known, the constant outflow of heat from the earth's interior, combined with the resistance which the non-conductive return of the rocks opposes to its egress, causes the temperature to increase as we go downwards from the surface at an average, though in places at a variable rate, of one degree for every fifty feet of descent,—the temperature of any point being determined by the thickness and conductivity of the rock above it. It is perfectly certain, that, if we removed any considerable amount of materials from any portion of the crust, the temperatures of every point below, down to a great depth, would gradually fall; while if we added the material thus removed, to another part of the surface, there a corresponding rise in temperature would occur. With this consideration in mind, let us note that the land areas are in general the seats of erosion. Therefore, beneath them the

temperatures of the rocks are normally in process of reduction ; while the sea floors, because they are characteristically the seats of sedimentation, have the rocks beneath them in a state of progressive heating. Next let us note, that all rocks formed beneath the water, being composed of fragments that come in pell-mell upon the bottom, enclose, between the bits, spaces which are filled with the fluid in which they were laid down, the amount being variable, but averaging about as much as one-tenth of the bulk of the materials. This water is usually so well sealed in that, unless expelled by heat, it may remain fixed in the rock for ages, even after it is uplifted as land. Now, let us conceive how extensive and long-continued are these kindred processes of erosion from the land and deposition on the sea floors. Even in the very imperfect records of the strata which remain on the continents, we find evidence that leads to the conclusion that an aggregate of more than one hundred thousand feet, has been laid down within the limits of the legible history of the earth. It is by no means unlikely, that portions of the sea bottom have, since the water history of the planet began, received more than twice that thickness of sediments.

Recurring to the fact that the average increase in heat is at the rate of one degree for each fifty feet of descent, it is evident that a blanket of one hundred thousand feet of rocks would, in time, bring about a heat of two thousand degrees in the lowermost beds of the section. Acting on the water contained in these rocks, the effect would be to give this a tendency to pass with explosive violence into the state of vapor. The straining to the state of expansion would be comparable to that of fired gunpowder. So long as this heated water was held in by a compact covering of overlying beds, this interstitial fluid would be likely to remain in the state of repose ; but if, in any way, a path were opened for its escape to the surface, it would rush forth, and in its going, would force along with it the rock in which it was enclosed. At the temperature of even two thousand degrees,

these rocks, though essentially solid, owing to the pressure of materials above them, would become at once softened when the pressure was partly removed, so that they would be driven on by the expanding vapors contained in their centres. As soon as they began to move, they would become essentially liquid,—in fact, lava. Coming quickly to the surface, without the chance for the vapor to part from the molten mass, the whole of the discharged matter would, by the expansion of the water in its interspaces, be blown to bits, as we see it is in the beginning of an ordinary eruption. Later on, when the most of the tension is relieved, the lava melts up slowly so that the vapor has a chance to escape from the mass, permitting it to flow away as a stream. Finally, the discharge of vapor is lessened to a point when it can no longer force the molten rock to the surface, and the particular eruption is over, perhaps to recommence when other masses of steam have found their way to the channel of escape.

Although we have, as above, considered only the rocks commonly known as “stratified” to be the source of volcanic tensions, there is reason to believe that this increase of heat, due to their deposition, takes effect more generally in the old crystalline productions of the earth, than in the overlying stratified beds which induce the rise in temperature. It is well known, that probably all the crystalline rocks contain some water, either in small cavities or in the state of intimate and irresistible combination. On these rocks, the effect of the imposition of stratified deposits would be to induce explosions in the manner above described. It is, indeed, altogether probable that the greater number of eruptions arise from the expansion of vapors in this part of the crust, where, if the rocks have ever been stratified, they have lost all trace of the water-laid forms. Although in this, as in most geological actions, there is some doubt as to the applicability of the particular theory to all the facts which come in the given class, it seems tolerably certain that it is generally true: no other view begins to account for so large a part of the phenomena exhibited in volcanic action.

Accepting the theory that volcanic explosions, such as now occur on the earth, are due to the combined action of escaping internal heat and the deposition of sediments, we may account it as one of the many cases in which the machinery of the planet is worked by a conjunction of the solar and terrestrial energy. There, as elsewhere, the results of this interaction are at once important and beneficent. The celestial agents work in such a manner that the water and various important substances it dissolves, are in continued process of burial in the earth. It is probable that near one half of the water belonging to this planet is now stored away in the interspaces of the rocks. If there were no processes of return of these materials to the surface, the earth would, ere this, have been made unfit for life. It is in the great steam jets of the volcanoes that the fluid and much else of value to life, finds its way back into the overlying of the realm of sunshine. If we could trace the ancient history of molecules of water, it is probable that we should find that a large part of them had, again and again, trodden this circuit from air to the deeper rocks,—sent to power by the solar heat and released by the terrestrial.

Besides their good work in returning water and other materials needed by life to the surface, volcanoes have a large and important share in contributing materials for the formation of sedimentary strata. The greater part of the rock material they throw out, is in the state of dust, usually very fine, or pumice, containing so many cavities, formed by the remnant of the gases which did not escape, that it floats like cork. In some volcanic explosions the amount of this dust and pumice cast into the sea, there to float for an indefinite time, it may be for years, much exceeds a cubic mile. During the last two centuries, the volcanoes of the Javanese district cast into the sea a mass of detritus nearly equal to that which has been brought into it during the same time by all the rivers of the world. It is not improbable that the total contribution of materials to strata, which is brought

into the ocean by volcanic action, exceeds that from all the other sources of such materials. It must not be supposed that this dust and pumice usually finds its way to the bottom in the form in which it comes from the volcano. The finer material, and much of the coarser as well, dissolves in the sea water to find its way thence to the bottom through the action of organic life,—the most wonderful of all the means by which energy is applied to the surface of this sphere. Before we consider this mode of application of energy by the action of living beings, it is necessary to regard that assemblage of conditions which we term “climate.”

Stated in the simplest way, climate is the temperature and the moisture of a region, in reference to the organic and inorganic processes which go on there. We should not speak of the temperature of the moon, for the reason that there are no adjustments of heat and water on that sphere. Taken in this way, the variations of temperature, we observe, are due to the combined action of the solar and terrestrial influences. The solar tide of heat flows in with little variation, if any, which we can discern. It has been supposed that as the sun shrunk from the loss of heat, in the course of time, its forthgiving became lessened. But, as it shrinks, it becomes hotter, so that the stage of diminished heating power is indefinitely postponed. It is certain that in the vast duration from the Cambrian period to the present day, there has been no radical change in the temperature conditions of the earth; yet this duration is probably to be reckoned by the scores of million years. Such variations as we discern, and there are many of them, all lie within the range which has permitted the organic life of the earth to maintain itself in uninterrupted and plenteous development. Though glacial sheets have from time to time covered considerable portions of the lands of high latitudes, and portions even of the tropical belt which lay very high above the sea, the fields open to organic life have always been amply large. When we consider the position of organic life on the earth, with a deadly heat not more than two miles

below the surface, and a like deadly cold not five miles above the sea level, we must regard this maintained fitness of climate to the needs, as due to an admirable adjustment of the climate-making forces.

Such variations of climate as we observe in the present conditions, or in the past history of the earth, appear more likely to have been due to changes in the course of the ocean currents. Alterations in the height of the continents have been suggested as a partial agent in the change, but the relatively slight variations, in this regard, which we now observe in the great lands, would make it seem unlikely that this could ever have been the principal, or even a very important source of change in the distribution of heat or rainfall. There are doubtless several subordinate sources of climatal changes, but the prime cause is pretty certainly to be found in the alterations in the courses of these streams of the sea, which carry the heated waters of the tropics towards the poles, and return the cold waters toward the equator. Thus, of all the possible means whereby the last glacial period of the northern high latitudes could have been produced, the simplest we can conjecture, is a lowering of the lands about Behring Straits, so that the Japan gulf stream should have free access to the Arctic Ocean. Such a tide of heated water, by warming that frozen ocean to the state when it would become the seat of free evaporation, would, we may well believe, so increase the snow fall that the northern regions of Europe and America would once again be occupied by glacial sheets.

The last and most perfect result of the adjustment between the machinery of the earth and sun, is found in the organic life of our sphere. That it is a rarely perfect result, is shown by the fact that, so far as we can clearly discern, it can not well exist on any other of the planets, and surely not on any of the satellites of the solar group. The planet Mars is the only other sphere where the conditions of temperature and moisture, such as organic life requires, can possibly be looked for; but even

there, according to the judgment of those most conversant with the facts, it is doubtful if life, as we know it, could now be maintained. To face the marvel of life, it would be well if the reader could look upon a mass of fluid lava as it lies in the cauldron of a great volcano. He will see there the effective likeness of the earth before it cooled from its ancient state of igneous fusion, nearly to the fluid lava; he will find sheets of the same material in its frozen or solid form. This will fairly represent the original state of the earth as it began its prosperous intercourse with the sun. Out of such a lifeless mass, through the instrumentality of the waters and by means of the interacting energies of sun and planet, the theatre of life and all its actors, from the simplest beginnings to ourselves, has been shaped.

It must not be supposed that organic life has been but a passive recipient of the favors from earth and sky. On the contrary, it has, from the first, been one of the most active of all the agents of the sun in applying the celestial energy to terrestrial work. In part, this task is effected, as we have briefly noted before, by the action of the plants in protecting the surface of the lands against the excessive assaults of the rains. A related work is that of disrupting the rocks by the enlargement of their roots, and decomposing them by the influence of carbonic acid, which is produced in the decay of their dead parts. It is in a large measure by these processes that the mineral matter is brought into the divided state which is necessary to form the soil and thereby to feed life. The extent to which the formation and retention of the soil, and the protecting mantle of vegetation it nourishes, controls the shape of the lands, can not be conceived by anyone who has not closely observed the ways in which they operate. It is hardly too much to say that the forms of the earth's surface which meet the eye are even more the result of vegetation, than of the agents of erosion that have done the wearing. A like protective effect is afforded to many shores by the coating of sea weeds, and, in a better way, by the peculiar form of

plants known as nullipores, whose framework is of a hard, stony character resembling true rock. These marine plants are of considerable value in defending the shoreline against the action of the frost, and, to a certain extent, against the waves.

It is as agents of deposition, that organic forms play the most important part in the work of the world. On them it falls to separate the mineral substances which pass into solution from the water; to fix these materials in their skeletons, or other hard parts, and, at their death, to give this solid matter to the beds which are forming on the ocean floor. It is probable that somewhere near one half the products of the land erosion and from volcanic ejections, enters into solution in the sea water, and is there free to journey for an indefinite time in the driftings of the oceans. Were there no provision for removing this dissolved material, the seas would long ago have become so overcharged with various materials taken into solution, that they would be like the waters of Utah Lake and other dead seas, utterly unfit for life. Although a few materials may be laid down on the ocean floor by certain chemical processes, by far the greater part of the deposition is brought about by the action of organisms. The marine plants, taking the mineral matter from the water, give it, sometimes at their death, to the sea floor, but more commonly as food to animals, whence in time it passes to the strata in the form of more or less well preserved fossils. Even on the land, especially in swampy regions, vegetation makes considerable accumulations of strata. These generally do not long endure; but, if they happen to be buried, they form coal beds, which, over large areas, are important elements of the rocks: structurally as well as from the economic point of view.

Near the continents, because of the large amount of rocky débris that is there brought to the sea floor, the strata commonly are composed in larger part of sand pebbles and clay; but, at a distance from the shore of mainlands, the share of organic material becomes greater, until, in the coral islands and many parts

of the deep seas, practically all of the rock deposits have once been in the living shape. Even in the strata of our continents, the proportion of limestone of animal origin is so large, that if it were to be withdrawn from beneath the land, the existing connected areas would be reduced to the state of scattered islands: the larger part of the Mississippi valley would once more be reduced to below the sea level; the Appalachian Mountains would form an archipelago; and there would probably be an open water-way from the Gulf of Mexico to the Gulf of the St. Lawrence and to the Arctic Ocean.

It is interesting to note, that all of this great work of limestone building is performed by the lower organic species of the plants and those groups of animals which have the simplest development,—that which is connected with the least advancement of intelligence. The higher species in general, according to their gain in intellectual station, become less and less important factors in the physical economy of the earth. Thus, the whole group of vertebrates, with its many thousand species, contributes less to the formation of strata than certain crustaceans: only a very small part of what is given by a few species of minute protozoa. The mammalia, up to man, though the highest class of animals, have contributed only an infinitesimal share to the work of the world. When, however, we attain to mankind, we find a sudden change. The intelligence which has for ages been slowly gaining in capacity, at length in him, attains a measure of ability which enables it to exercise directing power over the course of actions. With the program of civilization and of invention that comes therewith, man is coming to have a great and increasing control over solar energy, and to turn it according to his desires. Already he has changed a large part of the lands by subjecting them to tillage, thereby greatly increasing the rate at which the rainfall wears them away. He is diverting the energy of the streams from the natural work of cutting down their beds to that of turning his mills; he is leading water upon the deserts, sundering the isthmuses

with canals, bringing the ancient stores of solar power embodied in coal and oil to the surface so that he may set them to his use,—in these and in manifold other ways this supreme product of the earthly and celestial forces is beginning to master the powers which have brought him to his estate. We can not foresee the end; yet it is clear, that, with man, this earth is to enter into a new realm,—one in which the celestial forces are in ever-increasing measure to be directed by this creature.

In the foregoing brief account of the modes in which the power that originally resided in what may be termed a massive form within the unconsolidated materials of our solar system, has come to be applied to the multifarious processes of the earth's surface, only a small part of the facts which are known, has been mentioned. The aim has been to fix the attention of the reader upon certain points that may serve so to guide his mind, that some part of the order which exists in this world may be revealed. Although this order may perhaps be discerned from such a presentation, the real profit thereof can not be attained by the acquisition of these facts as mere knowledge. If the noble truths of Nature are to be fruitful to us, we must make them spiritually our own by linking them with our consciences in such a manner that they may guide our lives. This union of the intelligent man with the realm about him is clearly the summit of all the long-continued actions which have led to his existence.

Those who would attain this large view of the earth and its processes, will do well to found their inquiries on a study, such as is above outlined, of the energy that comes to the surface of this sphere from its depths as associated with that energy which comes from the sun. On this coöperation has depended all that has made the earth the seat of a great history,—to it we owe the procession of events that has brought us here.

ORGANIZATION AMONG ARTISTS

CHARLES DE KAY, *New York.*



IN all ages and in most countries where the yearning for progress has been accompanied by public criticism, the wail has gone up that between the artistic few and the inartistic many there is a gap, which the strongest characters among those who practice art and those who merely squander advice upon it, are unable to bridge. The late William Morris belonged to both classes, for he was at once a productive genius and a critic with a powerful literary gift. Sometimes it is said that this carping at things artistic as they are, is a modern vice, and springs from the decadence of mankind toward the close of the nineteenth century. But this reasoning is based upon the absence of records showing what criticism was going on at earlier periods; we have no good reason to believe that any period characterized by a longing for improvement and reform was lacking in just such mournful notes.

Certainly among those peoples whom we are wont to call half-civilized there have been cases of extraordinary artistic efficiency, which, so far as they go, and within the narrow limits in which they moved, are superior to the products in somewhat similar lines among the modern civilized communities. We may account for this on the grounds very often advanced that the ancient peoples, whose works have survived, and the modern races which exist in a semi-civilized condition, represent the innocence and infancy of the human mind, and as such, are nearer the sources

of the human race, closer to Nature, and unaffected by the self-consciousness which exercises so unhappy an influence on the art products of the civilized nations. Another view might be called that resulting from the historical perspective. In looking back at former periods of history, we may be under a delusion, owing to the fact that only fine products of a given epoch are likely to survive, because poor and indifferent work has not been of sufficient value to be preserved. On this line of reasoning we may be admiring only the oases in long deserts of artistic sterility; and because we only see fragments of these oases, we conclude that the nation and epoch in question were generally of high artistic power and marvelous productiveness. Yet this may be one of the many fallacies or optical illusions, if you will, that beset our efforts to penetrate the mists of the past. It is like miners who find rich lodes of ore at two different points, and jump to the conclusion that the stratum they have tapped, continues just as rich through the intervening space. The fallacy of this kind of argument, when applied to gold and silver mines, is only too well known to those who have built vast superstructures of wealth upon uncertain foundations.

Another way of looking at the same phenomenon among the old races and the modern semi-civilized tribes, is to lay great weight upon the force of tradition. We think of the families of artists in India and China and Japan, for instance, who have been known to hand down from father to son traditional ways of producing exquisite effects in various arts, and that makes us reason that the modern world suffers from a lack of continuity in effort, from a lack of humility in the individual workman, who will not accept with the perfect faith of an apprentice the maxims of his master—what we call the modern straining after originality.

All these views have a certain amount of truth, but it may be doubted whether they contain anything that is of practical use for us. We are not people in the springtime of the human race, nor are we unconscious semi-savages, nor is it possible for us to look

forward to the time when certain kinds of art shall become hereditary in certain families. We have to regard facts as they are, and look actualities in the face.

So far as the arts of the United States are concerned, we are forced to consider them in their connection with the needs and aspirations of the modern day and of the people of the United States. And the most that we can do is to examine the situation as regards our immediate rivals outside America, and distinguish, on the one hand, between our own requirements and those of Europeans, and, on the other hand, between the situation of artists in Europe and the United States.

The quickened communication between nations and the marvelous fluidity of trade, if such a term be allowed, make it impossible for our art to ignore the rivalry of Europe, supplying as we do, the food stuffs and a large part of the materials of clothing to the world, and latterly and particularly, the metals in various forms, machinery, and objects that in a certain way approach the arts without being artistic products. Of necessity, we are at a disadvantage in certain respects when it comes to objects of the fine and the applied arts. The prestige of European art is against us; this makes it imperative that, other things being equal, the American artist and artisan must exert themselves more than their European brothers. On the other hand, the very fact that the arts are not of such familiar and everyday occurrence with us as with Europeans, should give our people the advantage, owing to a greater liberality of mind and to freedom from tradition and prejudice. In other words, the United States should be a very open field for experiments in the fine arts, and especially in the industrial, because the innovator here should find less of tradition, less of prejudice to encounter.

And on the whole, it may fairly be said that such is the case. The artist may have before him a larger body of people indifferent to his art, but at any rate the soil for his plant is more virgin, and he is more likely to meet with patient consideration, even if

what he has to say seems to lack the backing of artistic precedents. Moreover, the natural power of wealth should not be forgotten. It stands to reason that wealth as such has little or no influence on the fine arts; indeed, it often harms the fine arts when it goes hand in hand with lack of taste and artistic education. Examples of this sort are too numerous in the United States that it should not occur to everyone. But this should not blind us to the fact that poverty in a nation has an even worse result, because it prevents those people who have taste and education from encouraging artists.

When we compare tendencies in Europe with tendencies here, we see that the movement in Europe is always towards centralization. Even in France, which for thirty years has been a republic, the aggregation of artistic, as well as other forces, is at the capital. This is the natural outcome of monarchism and the patronage of the arts on the part of royal families. The same holds good in England where subordinate centres which may once have been affected by local centralization, like Edinburgh and Dublin, have a hard struggle to counteract the movement of artists toward London. The same phenomenon is visible in Germany, where the three centres are Munich, Berlin and Vienna, considering Austria, in this case as a German power. In Italy the central and political power at Rome has been too recent to overcome the local art of Venice, Milan, Florence, and Naples. But even in Italy, where sectional feeling is still so strong, it is merely a matter of time when the capital of the country will exercise an overwhelming attraction and the Eternal City will become, even more than it is to-day, the centre of the arts.

But when we consider the United States, things are very different. It may be true that New York, owing to its geographical position and the enormous preponderance of its population, is practically the artistic centre, but it is a centre far different from such a one as London, Paris, or Munich. The artistic vigor and life of Chicago, Boston, Philadelphia, St. Louis, Cin-

cinnati, correspond with the same phenomenon in politics. Let the pull toward New York be ever so great, yet these centres are sufficiently powerful to counteract the draft and hold their own. In art matters, therefore, we find European nations centripetal, but the United States centrifugal. Even in the arts we can not give up our birthright of a nation of confederated States. Let some wealthy citizen of any city of the Union, or let a patriotic legislature, resolve to foster the arts in the capital of that State, and the thing is done. Even our universities are turning their energies in the direction of the arts, so that we find a college in New Orleans like Newcomb College producing a new and extremely interesting form of art pottery, and at the other end of the Union, in Maine, old Bowdoin sets up an art gallery and calls to herself professors in art.

What we find here is often the text for lamentation. It is very usual to hear artists sorrowing because we have no single exhibition annually in one great centre of the arts, say in New York city, like the annual show of the Royal Academy in London, or that of the Salon in Paris. That this is really a grievance for the artist, or in the long run a disadvantage to American art, I am not prepared to admit, much as I value the opinion of professionals in matters of their own department. So far as I can discover, the argument seems to be that one tremendous exhibition a year acts, in some sort, as an advertisement and fixes the attention of the public, especially of the fashionable and well-to-do public, upon the arts, more especially painting and sculpture, and produces a fashion for the discussion of art matters and the purchase of objects of the arts. It is true that there are other arguments advanced, namely, that the artist reaches a higher level in the estimation of his fellow-men, if a great organization exists which lays down the law as to excellence; and by the mere distribution of medals and "honorable mentions" puts emulation to work and produces and encourages the formation of a body of buyers, who through competition force prices for certain work to extraordinary heights.

It must be observed, however, that this view is a strictly professional one, and though not in any way blamable, is not a matter of the very first importance when we are considering the wide field of art, the usefulness of the fine and industrial arts in educating the nation, and the sum of glory which immortal works will inevitably charge to the account of a people that produces them.

Organizations like the Royal Academy and the Salon may be a hindrance rather than an advantage to a nation by substituting official and routine art for the natural expression of a nation in its fine arts. Indeed, it may be said that it is just the old nations of Europe to whom such hard and fast organizations do the greatest harm. A people of a recent and new mixture where things are in a more fluid state and the art atmosphere is raw, would be likely to benefit more by academical training and artistic red tape than the old, established peoples; just as the untrained militia of a country without a standing army requires severe discipline, while the constantly trained soldiers of lands that keep a standing army, become too much like machines and in the ruthless actualities of war suffer from a lack of individual initiative.

Moreover, the concentration of exhibits at a single centre and in a single exhibition during the year, compels the formation of huge exhibitions which by their size defeat their own object, so far as giving pleasure to and instructing the public is concerned. As a rule, art exhibitions have been made in large, closely populated cities where a thousand other interests draw the citizen aside, and make it difficult for him to give time to an examination of works of art. Now and then, through the winter season, he can run into a small exhibition and give half an hour to its examination, but to give up a week at once to the proper consideration of one of the enormous exhibitions, such as are brought together in Europe and are desired by many in the United States, is almost impossible.

What was the spirit that led to the up-growth of the great European exhibitions? At bottom it was the spirit of caste. These exhibitions catered to a body of people of leisure and a small section of persons who were connoisseurs. This is not the spirit of the United States, nor do I believe that it has arisen here since the appearance of colossal fortunes. Most of the rich Americans are strenuous workers, and if they are not managing great corporations and railways, or attending to the details of their estates, are expending their natural energies, for the most part, in travel.

What we are after in the United States is to close the gap between art and the great body of the people, not merely the wealthy, or the well-to-do, but the anxious, hard-working public. And when we try to do the contrary, we fail. The National Academy of Design made the natural error of imitating foreign examples instead of starting with ideas on a much wider scale and striving gradually to approach the moment when it might appeal to the wide public. This is also the history of the Pennsylvania Academy of the Fine Arts, and indeed it is a natural tendency of all art organizations, whose members have been educated in Europe and in their most formative years have been impressed by European precedents. It seems to me, that the maxim which all organizations of artists and others interested in such things should write upon the façade of the buildings they erect as shrines of art, should be, "Strive ever to bring art to the public."

Few artists are there who are likely to subscribe to such a maxim at once. Many I fear receive it with aversion; but perhaps, from the very nature of their occupation, they are not in the best condition to realize what is the best for themselves.

No better occasion could present itself than the opening of a new century, to break definitely with a policy which has not proved itself a success here, and try issues with a new plan of campaign that seems to meet the requirements of the United States. If Europe can get along with a wide gap between the

fine arts and the general public, we can not. We shall never have art in a healthy state until the common people show at least enough interest in art to come to exhibitions, and recognize the profession of artists as one equal to that of lawyers and merchants.

In order to accomplish this result organization is necessary.

To this it may be objected that the organization of art in Europe has just been subjected to criticism; why, therefore, advocate organization for the United States?

The answer is, that it is not organization *per se* which is wrong for us, but the kind of organization that obtains among artists in Europe when the different conditions in America are considered. As hinted above, perhaps in the United States we need organization more than the Europeans do, because our popular centres are composed of newer elements and our civilization in many parts of the Union is still in the crude stage. What we should do is to look about for some kind of an organization that exactly fits our ideas, social and political, and appeals to the sentiments and habits of thought of our own people, and avoids any clash with the opinions of the public at large, in so far as no artistic principle is involved and the concession can be made with dignity.

The new horizons in art matters thus indicated can be already, to a certain extent, descried. The gap between the fine and industrial arts on the one side, and the great public on the other, has already begun to close a little, and these are the stages of progress: First, The Centennial at Philadelphia; second, The World's Fair at Chicago; third, The Library of Congress at Washington; fourth, The Naval Arch at New York; fifth, The Appellate Court at New York.

Those who recall the Exhibition of 1876 at Philadelphia, and the artistic—alas, the so-called artistic, side of our industrial objects—can not but smile at the comparison with what is accomplished in the present day. The stride forward in the general feeling for art in the United States was shown in Chicago in

1893, more especially in architecture; at least the architectural side of that exhibition was more patent to the eye; yet, at the same time, the contents of those buildings proved that in manufacture great progress had been made. The decoration of the Library of Congress at Washington showed that the nation through its representatives are willing to consider the artistic side and spend liberally for the cause of American art. One result of the scale on which decorations have been applied to the Library of Congress has been a constant comparison set up between the Library and the Capitol adjacent. This building, which is accepted by all fair-minded critics, the world over, as one of the most majestic and beautiful structures on earth, has been decorated after a fashion which sets the teeth of connoisseurs on edge. There is a mixture of platitude and vulgarity in the paintings in the Capitol, and there is a hopeless dullness in the great mass of the sculpture, within and without, that render a near view of the Capitol a penance to those who love art. Coming from the Library of Congress up to the Capitol, one plunges at once from the varied and well-trained cleverness of the modern artist into the sterility of American art fifty or sixty years ago. If the exhibitions at Philadelphia and Chicago proved rough-and-ready educators of the public on a gigantic scale, so the decorations of the Library of Congress must act as educators in art for our representatives and officials in Washington, so that we may look forward with some degree of certainty to the moment when Congress will say: "Let the magnificent building in which we meet to deliberate and speak for every part of the Union, be no longer an echo, so far as its decorations are concerned, of a period to which we do not like to look back, but let the citizens, who have shown genius in the arts, come to Washington and make the Capitol a more beautiful building within and without, than is the Library itself."

The Appellate Court on Madison Square, New York, is not a large building, nor are vast sums of money being spent upon it,

and yet it forms one of the stages of advance in the direction of the union between the public and the arts. It is the first public building in the greatest city of the land which has been designed by architect, sculptor, and painter, in the closest union compatible with the division of those three arts among different men. In other words, the architect Mr. Lord did not design this building and then proceed to spot it over with sculpture without, and dot it over with painting within, but made sculpture and painting and mosaic, part of the original design, so that all these arts should be intimately blended, as was the case in former epochs when art held a higher place relatively in the commonwealth than it does now. And there is hope that the next two great public buildings for New York city, which are rising, or are about to be begun, namely, the Hall of Records on Chamber Street and the new Custom House on Bowling Green, will show the same blending of art effect, and thus prove be further steps toward the popularization of art.

The Naval Arch is the latest example of the approach of art to the heart of the people, and perhaps never has there been so striking an example of the wisdom of boldly throwing oneself upon the sympathies of the public at large. This triumphal arch with its approaches has produced very much the same effect upon the public that the architecture of the World's Fair did in 1893. It has reduced the average observer to a state of open-mouthed admiration and caused acuter minds and the critical a vast deal of pleasure in arguing the question of classical against new and hitherto unpublished art, or discussing the matter of site, or again the appropriateness and beauty of the various sculptures to be found upon the Arch and clusters of outlying columns. The Arch itself, the swiftness with which it was constructed, the readiness of the sculptors to give two months of their valuable time for the benefit of the city without remuneration, form an example of the uses of organization such as one rarely meets with close at hand. For here we have not only the organization of the sculptors, but

a proof so popular, so patent and so open to all the world, that he who runs may read.

Attention has been called elsewhere to the fact that the success of the sculptors in producing an effect of grandeur and beauty at short notice is not a matter of chance, but is the outcome of organization of a peculiar kind, not the sort that we see in Europe, but an organization containing the germ of the very thing which seems to be necessary to the progress of art in the United States. Some years ago when the sculptors were brought together and united in one society, perhaps it would have been possible to have made with the material present in a city like New York a guild or close corporation like the National Academy of Design, but it is very doubtful whether such a society would have been self-supporting, and it is quite certain that at this moment it would never have been able to accomplish such a task as the Naval Arch in the way it did. What then was the apparent secret of the Sculpture Society's vigor wherein it differed from other organizations of artists which have taken many decades to arrive at anything like fame and power? Is it not the fact that from the start the sculptors went to the public and asked them to be part of their organization and share with them the burden of keeping their society alive, and give them their counsel and encouragement when they made their biennial exhibitions and held their monthly winter meetings? The frank attitude of the sculptors seems to have pleased many men and women in New York and other cities, who were not artistic in any practical sense, but either loved art or thought it their duty as good citizens and patriotic, to lend a helping hand in however small a way. The sculptors avoided the old pitfall of professionalism, in so far as they made advances to the public and did not assume to be not only sculptors but good business men besides. They entrusted much of the management of this society to non-sculptors, and their trust seems to have been in no wise abused. Their lead has been followed by the Society of Mural Painters, and while the Archi-

tectural League does not admit the public generally, it opens its ranks to men of other artistic professions.

Is not this an object lesson in organization which points the way of the future by which artists must move toward the desired goal?

Granted that this is true and that we have here an indication of possibilities for the bringing together of art and the public, the question naturally arises, what should be the next step? It seems to the writer that this next step should be an approach of the various art societies of each great city to one common centre, at first through the meeting of committees appointed for the purpose and gradually by a drawing together of the buildings or club rooms necessary to the continuation of the purposes of the several societies. Here, too, we are not without precedents and forerunners, since the combination of resources on the part of the Art Student's League, the Society of American Artists, and the Architectural League, with the later adhesion of the Sculpture Society, has produced in West Fifty-seventh Street a very flourishing little centre of artistic endeavor. Already, indeed, the needs of these four societies have outgrown the space allotted them. The Art Student's League is forced to hire rooms outside, and if the Sculpture Society wishes to give a dinner on a big scale, it must seek a dining room elsewhere. Some years ago there was an opportunity given the National Academy of Design to unite with these organizations on properties adjacent to the Art Building in Fifty-seventh Street, but, true to its in-born and traditional character it declined the offer and set up its new building alone in one of the newer and less accessible sections of the city.

With the foundation of The National Arts Club another step has been taken toward the desired end, and a step from the side of the public; for the lay membership of this new club is composed proportionately of a far greater number of men and women than is, for example, the Sculpture Society. It may be regarded,

in fact, as a very remarkable sign of the deep interest taken in art and in the artist by the public, when one sees a new club starting full-fledged with as large a membership as some of the oldest in the city. It shows that Americans are realizing very keenly the honor which great artists confer upon the country, and their duty in assisting the development of the national arts on the broadest lines.

Observe that The National Arts Club has a wider scope in its endeavor than any organization yet established, for without neglecting architecture, sculpture and painting, which to most people represent art, it professes to occupy as its special field the promotion of art applied to industries, and the encouragement of the artistic side in manufactures. By an ingenious arrangement its resident members can become likewise members of certain specified societies of architects, sculptors and painters, without paying more per annum than they would were they to be members of the Arts Club alone. In other words, so far as resident members are concerned, their membership in the Arts Club includes, if they so choose, membership in two or three other organizations, such as the Sculpture Society and the Municipal Art Society.

Thus in New York city, at any rate, we have the beginnings of a bridge from both sides of the gulf that has hitherto lain between the artists and the public. On one side are the artists asking the public to share their exhibitions, lectures, discussions and entertainments, and on the other side, the public, represented by ladies and gentlemen interested in the arts, opening a club the particular purpose of which is to organize new lines of work for artists and encourage admiration for the pure and applied arts in yet wider circles. Nor is this interest shown by the foundation of the Arts Club confined to the city of New York; on the contrary, more than half its membership is non-resident, thereby testifying to the fact that the feeling for art is not local nor confined to the great cities, but truly national, and belongs to

those movements in modern times which must be reckoned with by the student of sociology.

And here it may be noted how many people are still in the way of thinking only of painting and sculpture when they see the word art. Some will include architecture in art and others add stained glass and mosaic, but the number of people who have laid hold of the idea that art has nothing to do with the material that composes it, is astonishingly few; and I am speaking now of educated people. Yet it is obvious after a moment's thought that the paddle of a New Zealander's canoe, exquisite in its lines, perfectly adapted to the work it has to do, delicious in color, and carved in conventional designs with that ineffable charm some music offers us, a charm absolutely impossible to state in words—it is obvious that some such common thing, carved and decorated by no one knows whom, is a work of art, while thousands of canvases painted by men and women who have given their lives to their profession, are not works of art at all. I think it is John La Farge who speaks somewhere of the fetich of canvas and "sacred linseed oil." The man who wrought the paddle was an artist, the man who painted the juiceless, tiresome, academical picture should have found some other occupation; for no artist is he. Are there indeed, we may exclaim, any minor arts? If there are pure arts, then there must be mixed and impure arts, and the very term pure art is a sneer directed against what are more courteously termed minor arts. Yet the very persons who started the common use of this distinction in favor of painting and sculpture, would have to admit that great genius can show itself in any material. We have only to look around us and see the stained glass of La Farge, Tiffany, and others—the pottery of Volkmar, Grueby, Brouwer and their comrades—the small bronze and silver works of St. Gaudens, Linder and other sculptors, to realize that the time has gone by for the spirit of caste and guild to tyrannize the natural instincts of the public. The time has come when fame and fortune should be within the

grasp of artists in the industrial arts as well as in architecture, sculpture and painting.

To reach the point when the art in an object, and not the material with which it is wrought, will give the maker fame, is anything further required than a union of the organizations now existing in our great cities, as for example in the city of New York? We would not be true to our heritage and principles as Americans, if we should demand that this union must be patterned after foreign example; on the contrary, these societies should organize for self-help and for advances toward the public, each on its special line, each preserving its own identity, each profiting by the progress of its neighbor. The societies more closely identified with knots and guilds of artists should seek some way of a closer union with the National Arts Club, so that all sections of the arts in New York should work together with as little friction as possible, with a minimum of expenditure of time and money, and without loss of individual importance, to the grand end, namely, the impression upon the public of the truth that the arts are one of the greatest glories of a nation, and that every citizen is but doing his duty when he aids, according to his means and capacity, their encouragement.

How this thoroughly American union of separate interests is to be accomplished, this is not the place to state; nor would it be profitable to enter into details of that sort. It is sufficient to know that the various bodies of professional artists and of mixed professionals and amateurs contain plenty of men and women perfectly capable of formulating a plan, just so soon as they completely realize the necessity for action. Nor is it necessary to place before those who are thinking deeply on this matter any concrete example like the Salon at Paris as a desirable aim. On the contrary, it may be that such an "exposition" as we see annually in Paris, and from time to time at international shows, is just the thing which is better avoided. At any rate the growth should be from within, outward. The union having taken place,

the various societies and clubs interested in the arts on the widest lines having combined their forces, something fine will naturally be evolved.



THE THEATRICAL SYNDICATE

NORMAN HAPGOOD, *New York.*



IN the development of the drama in America to-day, no force plays so distinct and strong a part as what is commonly called the Theatrical Trust. Its growth has been rapid; its power is immense; and the history of its rise, if intimately known, sounds like a melodrama or a satirical romance. The first three acts of this story are to be here given, as much from the inside as is permissible. The remaining two, the decline and fall, may be narrated a few years later.

The tale will not contain as much evil as might be expected by enemies or as much good as is thought by friends. Average human nature among actors and managers has many constant features. The trust is supported by the love of money. It is wholly commercial. How many outside of it are much influenced by unselfish considerations? There is some truth in talk about art, but more cant. Most of the trouble between the actors and the Syndicate has been over terms, and, in most cases, when the players who talked most about intelligence and freedom were offered more money, they became silent.

The excessive love of wealth is one of the gloomy qualities of American life. It influences you, the reader, and me, the writer, as well as the actor, the playwright and the manager. In all walks there will be found exceptions. Augustin Daly worked for fame and his immediate satisfaction, producing only as many

mere money-makers as he needed to continue his career. Heinrich Conried, a German to be sure, gives up to cheap farces only as many weeks of each year as will enable him to produce, during the remainder of the season, worthy modern plays, and the great classics. Even when the mercenary spirit exists it need not be absolute. Richard Mansfield spoke large words about his independence, and when the temptation came he ate them. Yet it does not follow that he cares nothing for art. Not even the power of the Syndicate, for instance, could force him wholly into plays of innocuous idiocy, as it does some of his fellows. In this story the heroes are not angels, or the weaker persons villains, although most of them are frail.

During the season of 1895-6 it became known that a combination was being formed to control many theatres. The spelling of the names of some of the members varies, but on the present method they were: Nixon and Zimmerman of Philadelphia; Klaw and Erlanger, and Hayman and Frohman, both of New York. By February it was announced that thirty-seven first class theatres were in the hands of the Syndicate. To each of the houses thirty weeks of "attractions" were to be guaranteed. The essence of the system, from that day to this, with constantly increasing scope and power, has been that the theatres take only such plays as the Syndicate desires, on the dates which it desires, and receive in return an unbroken succession of companies, with none of the old-time idle weeks. Another inducement to the owners of theatres was the promise of better terms from traveling managers; but the actual outcome of that idea is not so clear.

Avoidance of conflicting plays, or of a series of plays too much alike, was also one of the proposed advantages, but this has turned out a difficult object to gain, especially with the necessity of changing all dates to suit big Syndicate successes; and many theatres have the ordinary padding, farce comedies, for weeks at a time.

This combination was made possible by the prior work of the individual firms composing the Syndicate. Hayman had gained

control of many theatres in the far West, and Klaw and Erlanger gradually secured a number on the route from Washington to New Orleans. Few, if any companies, can afford to jump the distance between those two cities, so with the best houses in Richmond, Norfolk, Columbia, Atlanta, Montgomery and Mobile in their hands, Klaw and Erlanger were practically masters of that territory. Later they obtained similar power over the route coming down from Ohio or Pennsylvania through Tennessee, until they could dictate to companies wishing to go from Pittsburgh, Cincinnati or Chicago to New Orleans. A Southern manager, named Greenwall, tried to get enough theatres to keep New Orleans open from the North, but failed. The first of the large cities to be entirely controlled was Philadelphia, where the theatres were in the power of Nixon and Zimmerman; and at first the most the Syndicate could do was to shut a company out of the Quaker City; but now a number of cities of almost equal importance are barred. To be practically controlled, a city need not have all of its theatres in the hands of the Syndicate. If the routes approaching it are dominated, the power is almost equally complete. San Francisco, for instance, has an independent theatre, the California, but few companies from the East can afford to go to the Pacific coast without playing in such places as Denver, Salt Lake City, Omaha, Toledo, New Orleans, St. Paul, Minneapolis, Kansas City, in all of which towns the leading theatres are under syndicate control. When it is remembered that most of these are one-week stands, the difficulty of getting along without them will be obvious. Control of the one-night stands, especially in the rather unprofitable South, is less important for the better class of companies, but to be shut out of Cleveland, for instance, where no theatre of any kind is free, means much. Detroit and Providence are further illustrations, as are smaller places like Utica, Syracuse, Wilkesbarre, Rochester, Reading, Lowell, Mass., Newark, New Jersey, and Jersey City.

Of course it is possible for a company, if it finds all the first class theatres barred, to go into second or third class houses, if there happen to be any. When the formation of the syndicate was first rumored, and fear and incredulity were showing themselves about equally among the traveling managers, Joseph Brooks, who now has close relations with the Syndicate, said: "Suppose a trust controlled the best theatres in Boston, and for some reason, tried to shut out Mr. Crane. What would be the result? Why, I should simply go to a second class house and raise the prices, and thus bring another first class house into the field."

This escape, which was neat enough in theory, has accomplished little. The manager of a cheap theatre dislikes to raise his prices for a single engagement, because his public is likely to be displeased, so he will only do it for particularly profitable companies. Again, the "attraction" which goes into a house out of its class loses the advantage of the theatre's clientele, and only a very strong attraction can afford to do that. There are always a certain number of theatre-goers whose habits are almost irrevocably connected with certain houses. These people would go to see a play at Powers' in Chicago, perhaps, where they would never think of going to see the same play and the same actors on the West side. They would see *The Moth and the Flame* at the Lyceum theatre in New York, but not at the Grand Opera House. Another set would see *A Female Drummer* when it was at the Manhattan, but not when it was at the Star. The failure of *Griffith Davenport* in New York last season, at the Herald Square, was attributed partly to its appearance in a theatre where frivolous pieces had preceded it. That was pushing the principle too far, and it is often pushed too far; but it none the less counts for much. It was on this theory, indeed, that Mr. Hayman laid the greatest stress in his newspaper defense of the Syndicate, holding that as the theatre, not the company, drew the audience, the division of profits should be more favorable to the local managers.

There is not even a barn free in Cleveland, but in Brooklyn, for instance, the manager of a dramatic company hostile to the Syndicate might go to the Academy of Music, and if his attraction was strong enough he could overcome the obstacle of the identity of that house with other forms of entertainment. In Toronto, Pittsburg, Buffalo, Columbus, he could take a similar course. In Louisville he could play in a big music hall. In Cincinnati he could go to the Pike Opera House, where the highest seats are usually seventy-five cents, double the prices, and meet, in this case, little difficulty with the clientele, since it is made by a stock company which, though cheaper in price, draws the same kind of people as the more expensive theatres. There is the same condition in Baltimore. The larger the city the more difficult is it to overcome the character of the theatre. If Mrs. Fiske should appear in a music hall in Buffalo, for instance, the reasons would be understood and her business would be but little damaged. If she went to the Bijou in Brooklyn, or a similar theatre in Boston, or, a few years ago, before it became geographically unavailable, to the Park theatre in Philadelphia, she would suffer badly, because these places are so large that the attention necessary to overcome the things taken for granted cannot be rapidly concentrated on any one event. Even if Duse or Bernhardt should appear at high prices in New York City at the Star or Fourteenth Street, thousands among those who would flock to the Knickerbocker or the Empire would never think of entering the new ground.

As this great combination has fastened its grip more and more strongly on all the principal cities, some theatres have avoided ruin by becoming the homes of stock companies. Some of them are excellent and profitable, and their use in keeping alive the best plays after they have had their first vogue is obvious. One may sometimes find plays at the Murray Hill theatre in New York, for twenty-five cents, which will be essentially better than anything which then happens to be purchasable for two dollars,

on Broadway. These companies exist also in Cincinnati, Pittsburgh, Boston, Montreal, Columbus, Indianapolis, and many other cities, with apparent prosperity. If the richer class of theatre-goers had as many repertory theatres run for their benefit, as their humbler fellow-citizens, one of the worst results of the Syndicate would be mitigated.

The reception of the idea, when this combination was first discussed, makes a dramatic contrast to subsequent history. Managers tried to organize in opposition, and immediately failed. Then the leading actors took a hand, and their story is touching. Nat Goodwin, Francis Wilson, and Richard Mansfield were the leaders in an effort to form a combination of stars, strong enough to defy the Syndicate and make their own dates with the theatres, and their own terms. They said, with undoubted truth, that if there were a dozen very popular actors who refused to give up their business independence, the Syndicate could never become a real monopoly, and probably could not last. Mr. Goodwin's lawyers, therefore, drew up an agreement, to be signed by leading actors first, and later by as many others as chose to join. Finally, early in 1898, another agreement was signed by a few actors, to last until the end of 1899. It provided that, as "both artistically and pecuniarily the good of the many is being subordinated to the profit of the few by the combination before mentioned," an association was to be formed "for the promotion and protection of an independent stage in this country." The members were to book either through the executive committee of the association, or directly; the only point being that they should not book through any agencies or exchanges; practically meaning, that they should not book through Klaw and Erlanger, the booking branch of the Syndicate, although they could play in the Syndicate theatres, if the local managers would deal directly with them. A sum of five thousand dollars was to be forfeited by any member who did not keep his agreement and pay his assessments.

This last provision frightened one or two of the actors interested, but the agreement was ultimately signed by Francis Wilson, James A. Herne, James O'Neill, Richard Mansfield and Mrs. Fiske. Nat Goodwin had gone over to the Syndicate long before this. The *World* gave this account of his performance :

"The Trust settled this opposition characteristically and in short order. Knowing Goodwin to be the head and front, the life and soul of this effort, they tackled him, with the promise of giving him dates where and when he wanted them, and of a long engagement at the Trust's Knickerbocker theatre. Goodwin's weakness for New York engagements being well known to them, they induced him to desert the embryonic alliance of stars and join issue with the Trust."

Joseph Jefferson, whose high position made his assistance very desirable by the rebels, on March 13th, 1897, had a signed telegram in the New York *Herald*, in which he said :

"The first that I heard of a Theatrical Syndicate was the receipt of a letter from one of its leading managers, desiring me to play at one of its theatres. At the same time I got a communication from one of the anti-Syndicate managers, trusting that I would not join the new combine, which he deprecated as an unfair movement, and asking me not to desert his house. I declined the offer of the Syndicate manager and acted with my old one. Another old manager from one of the anti-Syndicate theatres wrote me in the same strain, and asked my advice as to how he should act to protect himself against the 'octopus who was gradually coiling himself around the old, legitimate managers.' I was about to reply and encourage him to meet the matter boldly, and that I would stand by him, when, to my surprise, I found that both of the old managers had joined the 'octopus.'"

About this time Francis Wilson announced that he had canceled all contracts for Syndicate houses, and would never play in one of them again. Mr. Hayman said that, on the contrary, the Syndicate had broken its dates with Mr. Wilson, because he had held time in two theatres in Washington without the knowledge of the Syndicate. He also said :

"Mr. Wilson was a shining mark, and we determined to make an example of him for the benefit of lesser offenders."

Mr. Wilson gave out the following statement :

"Our difficulty with the Syndicate is precisely the result I predicted, last

summer, would be one of the advantages of aiding and abetting such a combine. Disagreement over one or two dates would lead to the arbitrary canceling of the whole season's tour if entrusted to their hands. They denied, with wounded feelings, that they would ever be so base as to abuse their power. They were most plausible then. They had ostensibly combined for two most worthy purposes—to protect the strong attractions from playing in opposition to each other, and to restore, to a position of profit, many theatres throughout the country that had been losing money. I feel sure I am correct when I make the assertion that more than two-thirds of the managers, traveling and resident, are bitterly opposed to the organization, and the policy of this combination of speculators, pure and simple, yet such has been its growth and its arrogance that fear and self-protection from its arbitrary power have prompted them to submit to its dictation, temporarily, at least."

The newspapers all over the country took up the fight, and the *World* leading the attack, for some time, until it was overcome by sudden quiet, the *Sun* almost alone taking an active position in favor of the Syndicate. In March, 1897, the *Dramatic Mirror* sent out sixty-five letters to managers, asking their views, and received only six replies, showing what awe the combination already inspired. An actor, Wilton Lackaye, remarked later in an interview in a Southern newspaper, the *Nashville American*, that one thing only was certain, the actor who took sides would be injured, whether he spoke on one side or the other. In spite of danger, however, a number of significant opinions found their way into print during the next few months, among them these :

WILLIAM DEAN HOWELLS:

"Not merely one industry, but civilization, itself, is concerned, for the morals and education of the public are directly influenced by the stage. Everyone who takes a pride in the art of his country, must regret a monopoly of the theatre, for that means 'business' and not art."

THOMAS BAILEY ALDRICH:

"The inevitable result of a Theatre Trust would be deterioration in the art of acting and discouragement of dramatic literature. Certainly that is not a consummation devoutly to be wished."

AUGUSTIN DALY:

"I do not believe that the best interests of dramatic art nor the highest

aims of the theatre will be served, if the spirit of competition is chilled, crippled or destroyed ; and the first aim of all such combinations or syndicates, must be to absorb opposition and to kill off rivals or rivalry."

BRANDER MATTHEWS:

"The history of the theatre abounds in attempts at monopoly. Some of them seem to succeed for a little. All of them fail in the end. All such attempts are foredoomed to inevitable failure. The stars, in their courses, fight against them."

JOSEPH JEFFERSON:

"When the Trust was formed, I gave my opinion as against it, considering it inimical to the theatrical profession. I think so still."

RICHARD MANSFIELD:

"Art must be free. I consider the existence of the Trust or Syndicate, a standing menace to art. Its existence is, in my opinion, an outrage and unbearable."

MRS. FISKE:

"The incompetent men who have seized upon the affairs of the stage in this country have all but killed art, worthy ambition and decency."

FRANCIS WILSON:

"Dramatic art, in America, is in great danger. A number of speculators have it by the throat, and are gradually but surely squeezing it to death."

JAMES A. HERNE:

"The underlying principle of a Theatrical Trust is to subjugate the playwright and the actor. Its effect will be to degrade the art of acting, to lower the standard of the drama, and to nullify the influences of the theatre."

Henry Irving once gave his views in the *London Chronicle* on this subject:

"When I was in America, lately, a deputation of actors assured me that the Syndicate System is the curse of the American stage. Actor-managers, at all events, have made sacrifices for their calling, and protected its interests, and it will be an evil day for those interests, when they are left to the mercy of speculation."

Francis Wilson drew a cartoon which represented the Trust as a huge octopus, the scales labeled with the various ills which he imputed to the Syndicate, some of these charges being fair, some malicious. Mr. Wilson and Mr. Mansfield kept up a constant fire in speeches before the curtain. Mr. Wilson said, at

Buffalo, as quoted in the *News* of that city on December 12, 1897:

"This Trust is an ubiquitous invention of the enemy, to harass and squeeze out the life and soul and all ambitions of players, who are anxious to advance the interests of their profession."

He said, in Boston, on December 19th:

"If these men have their way this will, perhaps, be the last time that I shall have the honor and pleasure of appearing before you."

In another speech he said:

"Who loves fair play more than an American, and what choicer subject could one select, upon which to address an American public, than that of independence?"

On December 2d he sent this to the *World*:

"We are in the hands of the enemy; God help us."

FRANCIS WILSON.

In the same paper, a few days later, appeared the following characteristic effusion:

"*Quid Octopus hic?*"

"It is merely a question how far each actor is ready to be a hero in the fight.

"It is not conceivable that any artist, who respects himself and his profession, can be forced to submit to these speculators; unless the actor is wilfully blind he must know the method the Trust employs. Every actor who puts a dollar into the pocket of the Trust is supplying a new link for his own fetters. Every actor who works for the Trust is working against his fellow-artists.

"The Trust cajoles where presently it will command. Once it succeeds in accomplishing its present purpose, there will be nothing but the Trust. Ambition will be futile. The independent actor-manager will have to disappear. The public will be obliged to take what the Trust gives it. Actors will be able to obtain employment only through the Trust. Playwrights will be dependent upon the Trust. Theatrical advertisements, since there will be no competition, will be limited to two-line announcements, and also the dramatic critic's occupation will be gone. This is not fiction. It is truth. Shall actors be beggars at the door of the Trust? It is the artist that the people go to see, him and his work. It is the artist in whom the people are interested, not the members of the Trust.

"Recent experiences have confirmed my intention to play in halls or dime museums, in preference to houses controlled by the Trust."

RICHARD MANSFIELD.

On December 18th, Francis Wilson said, in New Haven :

"There are few of us nobler spirits, and I think I may justly say that we are nobler spirits, who will not submit to the dictation of the Trust. Some of those who do not wear the yoke of this combination are Richard Mansfield, James A. Herne, Mrs. Fiske and three or four others, and we hope that we may be permitted to follow our art without paying tribute to the Trust."

The next month a paper on the Trust appeared in the *Dramatic Mirror*, from which these are extracts :

"Its characteristics are greed, cunning and inhuman selfishness.

"Every actor in America should at once join the Actors' Society of America.

"Stars, heading successful organizations, should learn this truth : 'Self-interest is best secured through the ability of the many to gratify their reasonable wants, not through the ability of the few to dictate terms and conditions.

"The few leading actors who are standing for the independence of the American actor, and for the liberty of the stage, will not desert you. They cannot be cajoled, intimidated or bribed ; you may trust them. They may be beaten, but not subjugated.

"I regret that Mr. Jefferson has taken no action. He was cradled in the theatre. The theatre made him famous. The actors loved and honored him. I can well wish he had espoused their cause.

"I hope that Mr. Goodwin, who does stand for the highest art he sees, will speedily learn that the Trust, which grants him personal immunity, will withdraw that concession the instant it is strong enough to do without him. He is an artist, and his place is among the independent stars.

"As for me, I was an actor when the members of the Trust were in swaddling clothes. It is conceded that I have contributed something to the literature of the stage and to dramatic art, and I, therefore, refuse to be driven from the stage of my country, by the gentlemen who have the lessees and owners of a number of playhouses by the throat."

JAMES A. HERNE.

By this time, most of the rebels had succumbed. Fanny Davenport had written, in August :

"Of two evils I believe in taking the lesser, and as that was really a beneficial evil to me, I did not hesitate. I could not believe it wise or digni-

fied to play cheap houses even at high prices, nor politic to be shut out of my strongest cities with a new play on my hands. It would have been 'cutting off my nose to spite my face,' and as Messrs. Klaw and Erlanger met my wishes in every and all particulars, I could really see no sense in opposing them in filling the dates I desired.

"Our theatrical career at the best is short, and I have come to the conclusion that friends are better than enemies in it. There is now not five managers out of the Syndicate: Mr. Schoeffel, Mr. Miner, Mr. Hopkins, and in no other city are any but cheap houses open. If you are met with perfect accord and every wish granted, what sense, save a childish one, in standing out."

Others took the course thus frankly described. Look for a moment at the story of Richard Mansfield.

In December, Mr. Mansfield wrote to one of the combination of stars, usually called the anti-Trust:

"Let me persuade you and the other members to ask Mr. Daly to accept the presidency. He is a man of great executive ability, of great influence and has a commanding position. Moreover, he has his theatre in New York, and he can give time and thought to our cause (which is the cause of the actor all over the world) and will therefore deeply interest *him*.

"I shall be most happy to serve in the ranks, and you perceive I am firing away as hard as I can."

Mr. Daly refused, on the ground that he knew actors and would not trust them to hold out an instant in the face of temptation. Was he right? On January 24th, 1898, it was announced in the morning papers that Mr. Mansfield had reconsidered his position, and intended to play in Syndicate theatres.

He wrote himself, June 22: "People will class us amongst the 'unsuccessful,' if we do anything more just now in this direction, and fight chimeras." As soon as he was safely at peace with the Syndicate he had Mr. A. M. Palmer write to one of the few remaining members of the opposition:

"I think he regrets that he signed the agreement and blames me for having persuaded him to sign it against his own judgment. At the same time he does not wish it to be understood that he does not fully sympathize with you

in the unselfish struggle you have made against monopoly, and he would be the last to jeopardize the successful issue of your efforts."

Two prominent actors stood now practically alone in the fight. Mr. Herne became silent. Mrs. Fiske and Mr. Wilson were still standing by their guns. Augustin Daly quietly maintained his independence. He said little, but he meant what he said. He booked where he chose, and when Klaw and Erlanger tried to dictate to him he sent a sharp reply. Had he not suddenly died soon after, it is reasonably certain that he would either have played entirely this year outside of Syndicate theatres, or that Klaw and Erlanger would have yielded. It may be added that Daly's theatre is now the property of Mr. Daniel Frohman. Almost every month shows another theatre added to the list.

Mr. Wilson continued to talk until about a year ago. In February, 1898, he made a strong and lucid statement to the *St. Louis Star* :

"When I broke away, they said Mr. Wilson would be driven out of the business if money could accomplish it. Well, here I am, not a whit worse off for my experience. I have met with some difficulty in booking my attraction. One night stands are more frequent. I don't always get into the first class theatres. . . .

"Let Joseph Jefferson, Nat Goodwin, Billy Crane, Julia Marlowe play at the Fourteenth Street theatre. Would the people go to see counter attractions at the Olympic or Century in preference? . . .

"Actors are an emotional, impressionable, I might say shiftless, lot. . . . Nat Goodwin was going to build a chain of theatres from Portland, Ore., to Portland, Me., to fight the Trust. They offered him ten per cent. more than he had usually been getting and placed him in theatres he was anxious to reach. That put an end to his big talk.

"The idea of the Trust is to make one first class and one second class theatre in every city. One house gets all the heavy business. The other the lighter forms of comedy entertainment. What house gets the heavier business? The one controlled by members of the Trust, Messrs. Hayman and Davis, owning the Century, are not going to give the Olympic any the best of the St. Louis bookings. They are doing the same trick in Chicago and New York. After a while will come a different scale of prices for the two houses. There is where the Trust collar will rub.

"Next year Mrs. Fiske and Francis Wilson will not be the only people

outside the Trust. We can draw money, and every dollar we play to is a dollar out of the Trust's pockets. If we were half a dozen, instead of two, the end of the Trust would be in sight.

"As for inconvenience, it is slight. All it amounts to is our inability to get into a few cities. We can't touch Detroit, but I don't know that any one is consumed with a desire to play in Detroit. Newark is closed. I can't get into Philadelphia this year, but I will next season. There are Fourteenth Street theatres all over the country. Nobody that has a show the public wants to see need ask the Trust for permission to present it."

Well, Mr. Wilson, who could speak so sharply, was, about the end of 1898, offered fifty thousand dollars for a half interest in his business by one of the firms comprising the Syndicate, Nixon and Zimmerman. He asked one night to consider the offer, and then accepted it. On January 2nd, 1899, the event was announced. His reasons, given to friends, were these :

(1) The months of struggle had brought no new converts, and the strongest ally, Mansfield, had fallen by the wayside.

(2) There were no signs of the Trust's relenting or weakening.

(3) His following was slipping away, on account of the theatres he had to play in.

(4) His traveling expenses were greater.

(5) He had his family to consider.

In other words, he admitted that in a fight of a year and a half with the Syndicate he had been overwhelmingly defeated.

Mrs. Fiske now stands alone. Some people expect to see her yield also. I do not. If the Syndicate process of absorbing theatres goes on, she may be able to play but a few weeks each season in America, or not at all, but the chances seem to be that she will be found with her colors flying, and her reputation still higher, when the time comes for the Syndicate to disintegrate through its own excess of power.

The narrative up to date is told. It remains only to point out a few principles, most of them already indicated in the speeches of the rebellious actors.

We have taken a glimpse at the number of theatres controlled

by the Trust. Let us now get some idea of the actors under the management of the firms comprising the Syndicate, or closely allied to it.

Sir Henry Irving, whose views have been quoted, is now touring America under Charles Frohman's management.

Charles Frohman is either the controlling or the active manager of: William Gillette, John Drew, Annie Russell, Maude Adams, Julia Marlowe, Henry Miller—*The White Heather*; *Because She Loved Him So*, two companies; *At the White Horse Tavern*; *The Empire Stock Company*; *His Excellency, the Governor*; *Phroso*; *The Girl from Maxims*; *Secret Service*; *The Cuckoo*; *The Little Minister*, No. 2; *Under the Red Robe*; *Zaza*, No. 2, with an interest in *Zaza*, No. 1.

His brother, Daniel Frohman, not a member of the Syndicate, but in such close relations with his brother that all his force can, in emergencies, be added to the power of the Trust, is managing the tour of the Kendals. He also manages: E. H. Sothorn, Jas. K. Hackett, *The Daniel Frohman Stock Company*, practically two companies, since the acquisition of Daly's theatre; *A Colonial Girl*.

Klaw and Erlanger manage the Rogers Bros. who make much money; *Ben-Hur*, and various other things. They get their principal power out of the fact that the whole Syndicate booking is in their hands, subject, practically, to the orders of Charles Frohman and the interests of other associates. Andrew Mack is managed by Rich & Harris, in close touch with the Syndicate.

Now, what of prominence is there outside, besides the one open enemy, Mrs. Fiske? You may suggest *The Christian*, produced by Liebler & Co., who are on no good terms with the Syndicate. Well, when that play was looking for a route it couldn't get one, until it gave up one third interest to Klaw and

Erlanger, for a nominal sum, and then it had no trouble with its route.

Arizona is playing independently, and having a hard time, in spite of its popularity, in getting where it wishes to go.

Julia Arthur is booking through Klaw and Erlanger, but the Syndicate has no direct interest in her business. Let her find a money-making play, however, and it may be predicted that it speedily will have an interest, or she will have to fight. When she was succeeding with *A Lady of Quality* the Syndicate made it impossible for her to extend her run in New York, and forbade outside managers to allow her to alter time. It followed her at Wallack's with Klaw and Erlanger's notable failure, *A Ward of France*. Had any firm in the Syndicate owned an interest in Julia Arthur, she would have played on in New York. Time is always altered to suit the Syndicate actors and extend their runs where it is to their interest.

James A. Herne, although no longer openly hostile, is independent, but his fate recently has been uncomfortable.

Joseph Jefferson is let alone, in peace, to do as he chooses. He plays both in Syndicate and non-Syndicate houses.

Several stars of prominence, in whom the Trust has no direct interest or power, fear to incur in any way its displeasure. All, except Mrs. Fiske, play in Syndicate theatres part of the time. The dates of all the others, except probably Joseph Jefferson, could be tampered with at pleasure by the Syndicate.

It will readily be seen that with only one star in revolt, a few neutral and submissive, and most of the decidedly successful ones, in practical control, the Syndicate adds to its almost complete mastery of the play-houses an equally dominating influence over the players.

Although there are the two principal sources of power, there are others corollary in nature.

In their desire to control the press, the members of the Syndicate are only like other managers. In their ability to do it,

they are unrivaled. In New York, at least, it is not the obvious method, taken by smaller managers, of withdrawing advertisements. It is much subtler, in its essence like the deference which is always given to the very powerful. Their influence on any New York newspaper of the first class, even the *Sun*, is probably not greater than Mr. Daly exercised on the *Tribune* and the *Times*. The fact that they have most of the news to distribute helps them enormously with papers which exist primarily for news. Their control of most of the plays gives them exceptional opportunities to pay dramatic critics to write and re-write certain acts or plays, and to give opinions. A few newspaper men can be reached more directly, but not many. It delights some to see their remarks quoted in the many advertisements controlled by the Syndicate. But all these things are incidental. The fundamental principle is that the king can do no wrong. It is the vague but strong desire to be "in it"—the tendency to treat with respect and caution any great power. This is a psychological necessity. All the gossip, all the serious interests, of the world in which most dramatic critics breathe, centre in the doings of Mr. Frohman, his associates and dependents. By necessity, a tone results like the one in which a republican office-holder criticises McKinley; a mugwump, Cleveland; a liberal, Gladstone. Take an illustration. *Phroso* was one of the poorest melodramas given in New York for a long time; *The Conquerors*, one of the coarsest and dullest. *The Ghetto* was a strong play; *Children of the Ghetto*, a very strong one. The first two were highly praised and constantly talked about by the New York press; the last two were first attacked and then neglected. Had Charles Frohman produced the first two, he would have been reverently praised for high ideals. Had Liebler & Co. produced the last two, they would have met one storm of condemnation followed by silence. This is not mainly venality. It is simply that the point of view is strict toward equals, reverential toward monarchs.

This power of the press is not easily exaggerated. Paragraphs all over the country, for a solid year, assured feverish attention to Maude Adams's *Juliet*. Any item about the intentions of Mr. Frohman is eagerly quoted everywhere. If he produced the worst play ever seen, it would not receive the abuse heaped upon Mr. Zangwill's powerful drama. If he produced *Griffith Davenport*, the critics would shake themselves into alertness for its good points, whereas for Mr. Herne they expressed the sufferings caused by what they deemed its dullness. Now, the New York papers are seen by perhaps twelve million people, including the newspaper men all over the country. A Syndicate attraction is put into New York just as soon as it has been "tried on the dog." It then becomes known through the land. A non-Syndicate production, like *Arizona*, may have to wait a year or more before it can get into New York at all, and until it does, it loses the immense help of the New York press. Your man in Troy, with a salary of twelve dollars a week, is the type of the theatre-goer through the country. If he has three "shows" to choose from during a certain week, he spends his dollar on the one he has heard of. He would have heard of *The Christian* even had it never been in New York, but *Arizona*, *Griffith Davenport* and *The Royal Box*, would be playing a dangerous game to go to such towns before a New York run had made the idea of them familiar. They would be deserted for the familiar names.

Think of the effect of this truth on new productions. Mr. Frohman can produce something and get the benefit of this immense advertising at once. Perhaps it is only something like *On and Off*, which loses money in New York, yet after it has been forced to run months at the Madison Square theatre, it is so well known that it can, at least go on the road to act as fair padding for the many theatres which have to be fed by the Syndicate in return for their submission. If anybody else produced such a failure, he would be likely to lose what money he had. He couldn't get time in New York. Klaw and Erlanger would not

book him on the road. If he produced anything about like Henry Miller's *Heartsease*, say, for example, he also would go under. He must succeed at once and succeed greatly, or the country is barred to him. This means practically that the man with a few thousand dollars, who is willing to help on a young star in whom he believes, or a play which he thinks good, in order to make a few thousand more, is helpless. He must aim only at overwhelming successes. He must gamble, win all or lose all. Moderate returns are usually the reward of really high class plays, so this situation means immediately the survival of the mediocre.

The same conditions which make it difficult for new plays to gain a hearing, put obstacles in the path of an ambitious young actor, who wishes to star and has modest backing. Unless he makes a hit with great suddenness he can not get into enough good theatres to give him a season's work under favorable auspices. Almost the only way to-day, for an American actor to become a star is to serve faithfully in the Frohman ranks until he is widely enough known to head a company; and this is a poor way, because he can not then have a repertory, but at best one part a year. Where is the sense in a repertory, when more money can be taken in by one play, at far less expense?

This same principle is at work in the selection of plays. Nothing does more than the existence of this powerful association to prevent the growth of the American drama. Charles Frohman, who almost alone supplies it with plays, avoids risk by accepting only dramas already tested abroad or the work of playwrights already established. The actor-managers are practically the only persons who produce the plays of untested Americans. Mrs. Fiske within a short time has put on *Becky Sharp*, the first dramatic work of Langdon Mitchell, and *Little Italy*, by Horace E. Fry, thereto unknown, and, just before that, *Tess*, made by Lorimer Stoddard, then little known, and *Love Finds the Way*, adapted from the German by Marguerite Merrington, whose reputation was very slight. Mr. Crane and Mr. Goodwin also have their eyes open for

American work, but the more thoroughly they become influenced by Mr. Frohman, the stronger will be their tendency to take importations or the dramas of the few men thoroughly tested. Mr. Frohman and his associates have almost a corner in the plays of foreigners and of the established American authors. The ease with which they put No. 2 companies on the road gives the playwright greater royalties. Their domination of the theatres gives him better time and longer runs. They have greater influence with the public. Be it said to his credit, Mr. Frohman has the reputation of absolute honesty in his accounts, and of uncommon generosity, not universal qualities among theatrical managers. For these reasons, anybody not at peace with the Syndicate would probably find it hard to secure a play by Barrie, Jones, Pinero, Gillette, Belasco, or Fitch; and for the same reasons, an unknown author with a good drama would need to look elsewhere, and his only hope would be, that he had, not a worthy play, but one capable of making a sensation immediate and unmistakable, so that after a few nights or weeks, with or without giving up an interest in it, dates could be procured from Klaw and Erlanger. Even then the worst dates would be given, if the interest was not shared; but the distribution of dates is of little importance with a sensational success, though it may mean life or death to a play of which the drawing power is moderate.

The actor has advantages and drawbacks somewhat corresponding. Like the playwright, if he be in favor with the Syndicate he can have constant employment and prompt pay, and is therefore, naturally willing to take a smaller salary than he would accept from an outside manager. Like the playwright, he is not called upon for the higher qualities. Charles Frohman, with the multitude of actors under his control, would have difficulty in casting a great play. When he bent all his resources for months to the success of *Romeo and Juliet*, last spring, the result, compared to what Mr. Conried could do with a German classic, with his own company, in three weeks, was amateurish. It is

safe to say that with hundreds of actors to draw from he could not have put on *Becky Sharp*, as well as Mrs. Fiske did, or *Griffith Davenport* as well as Mr. Herne did—each vastly limited in choice by the monopoly. The power of the combine, of which he is the producing head, makes for mediocrity in acting as in plays. Annie Russell, one of the finest artists we have, needs the best kind of comedy, humour and sentiment of the higher grades, which is just what Mr. Frohman is wholly incapable of discovering or appreciating for her. The consequence is *Miss Hobbs*, a milk and water mediocrity, which is to be followed by other plays of the same grade. John Drew has, in the *Tyranny of Tears*, a good comedy, as Maude Adams has in *The Little Minister*, but how few of such plays are given by the Frohman stars, compared to the feebly commonplace. And these comedies, good as they are, are along lines which are known, in one case by the novel, in the other by its general quality. A play as good as these and in an unexplored field would have no chance, and a drama which rose above them into the highest tragic or comic greatness would find harder obstacles the higher it stood. As a rule, also, the best things done here, as the *Tyranny of Tears* and *Trelawney of the Wells*, are copied in almost every detail of the production from the foreign presentation. Our Syndicate managers, however, do not try to reproduce the successes of Sudermann, Hauptman, or Ibsen, or to encourage, in any way the sterner aspects of the drama in America. They dread anything austere and tragic. It means to them the same as unpleasant or dull. Obviously, therefore, actors are kept from showing talent in some higher lines as surely as are playwrights.

Nor, even within the limitations set by the Syndicate taste, does an actor stand quite on his own merits. A player in favor with one of the leading powers in the Trust has many of the advantages of the favorite of a king. He, or let us say she, will receive more attention in the press. No conflicting attraction will be found in the towns while she is there. She can extend

her time and throw out other bookings. Her rivals will be prevented from doing this. Time will be held generously for her, and if she is unsuccessful, cheap companies can be dumped in to fill her time while she goes elsewhere. When Francis Wilson drew his cartoon of the Octopus, he labeled one scale "special routes for our own attractions," and another "impossible routes for outsiders." There is a sliding scale, even for their own attractions, according to their closeness to the throne.

The full text of the Syndicate agreement, signed in 1896, by the six parties to it, was put in evidence in a libel suit which Mark Klaw, representing himself and his associates, brought against Harrison Grey Fiske in the early part of 1898. The most important provisions in the agreement are these:

"No attraction shall be booked in any of the said theatres or places of amusement (or in any which may be hereafter acquired as aforesaid) which will insist on playing an opposition theatre or place of amusement in any of the cities above named (or any which may hereafter come under this agreement) unless the party hereto having the theatre or place of amusement in said competitive point shall give his or their consent in writing to permit said attraction to play in the opposition theatre or place of amusement.

"The parties hereto mutually covenant and agree that so far as the attractions owned by them respectively are concerned (or in which they may hereafter, during the continuance of this agreement, become interested) they will play the same in the theatres or places of amusement hereinabove mentioned (or hereinafter to be included), or they will remain out of the cities in which said theatres or places of amusement are respectively located. It is hereby understood and agreed that the respective parties hereto can only play any of their attractions in any opposition theatre or place of amusement if they obtain the written consent of the party hereto having a theatre or place of amusement in said competitive point."

As long as this agreement continues, and is successfully enforced, by a group of men controlling most of the first class theatres in the United States, their power will be absolute. This royal power shows no signs of disintegrating. Many say that without Charles Frohman to feed the theatres with productions, the Trust would collapse. Others think that if Abraham

Erlanger should be taken away, the complicated business system could not be continued. Whatever may be true of the future, it is still true that this Syndicate can say to the theatre owner: "If you do not do business with us, on our own terms, we will not let you have first rate attractions. If you do, we will destroy your rival, or force him to the same terms. For the bookings we will take a share of the profits." To the actor or traveling manager it can say: "You must play in our theatres or in barns. For our theatres we make our own terms. We will show you contracts, but they will not be signed by us until the last moment, so that your bookings or terms may be changed at our convenience." To both they can say: "Nominally, we act as your agents. In reality, we are your absolute masters."

Is it well for such power as this to be in anybody's hands? Does it make for variety, ambition, and originality, in playwright, actor, or manager?

Is it well that such power should be in the hands of six business men, some with clean records, others with black ones, but all uncultivated. Is not the production of *The Conquerors* alone sufficient to answer this question? Is not the dearth of repertories, of great dramas, of American plays enough? Much stress is laid on the taste for crude, comic and melodramatic treatment of sexual matters undoubtedly shown by members of the Syndicate, but indecency seems to me a far less pervading fault than emptiness! From this vacuity and restriction the only escape is a break in the power of the Trust. Among methods for accomplishing this the surest and most abiding would be the establishment of theatres in large cities, owned by cultivated people; open to worthy productions, but provided with the nucleus of a company with a repertory. Once produce this comparison of a theatre run for a small margin of profit, controlled by the best public opinion, and consequently devoted to a wide and high range of dramas, with the theatres which measure success by profit and therefore tend

toward long runs and mediocrity; the commercial managers would be deprived of the most highly desired prestige, and their power would be limited.



RECENT ADVANCE IN PHYSICAL SCIENCE

JOHN TROWBRIDGE, S. D.,

Harvard University.



SCIENTIFIC investigation in the department of physics for the year 1898-99, has very little to show that may be considered epoch-making, such as the work of Rayleigh on argon, and the discovery of the X rays by Röntgen. Nevertheless, there are many interesting developments in mines already opened.

The International Yacht Race has brought forcibly before the American people Marconi's system of wireless telegraphy; and one finds much literature on methods of communicating between stations which are not connected by wires. Marconi has shown that it is perfectly practicable to send messages by the Morse alphabet by means of electric waves over distances of between thirty and forty miles. These messages are not impeded by fog or bad weather; and the waves apparently pass through hills and through walls of masonry. We say apparently: for it may be, that such long electrical waves roll around the surface of such obstructions, very much as waves of sound and of water would do. It has been demonstrated that Marconi's system will prove of use in communicating between ships at sea and between light-ships and the shore. It is not yet possible, however, to send the messages in a definite direction, or in other words to individualize the calls. Every one within the radius of thirty or forty miles can obtain the wireless messages; and any one by erecting

a tall pole, provided with a wire with simple apparatus for producing electric sparks, could have confused the messages on the occasion of the last yacht race.

The outlook for wireless telegraphy at the close of the year 1899 does not seem very extensive. Until some method is discovered by means of which electric waves can be directed, wireless messages will be of little aid in obviating collisions at sea in a fog; for information in regard to the course on which a vessel is sailing, is of no use, unless the bearing of the vessel can be determined. This bearing would be given, if the electric waves could be received only in a definite direction. It is said that an English inventor has succeeded in steering a torpedo boat from a distance by means of electric waves. These waves set in action a relay circuit by means of which the rudder is turned in one direction, and when the waves cease, a mechanism reverses its movement. The practical applications of such waves have led to renewed interest in their study. Mr. G. V. Maclean in the Jefferson Physical Laboratory of Harvard University, has measured their wave-lengths in air; and has determined their velocity, which is almost exactly that of light, to be one hundred and eighty thousand miles a second. It is interesting to reflect that before we hear the crackling sound of lightning, the electric waves excited by the discharge have traveled many hundred miles. One of the desiderata in the subject of electric waves is a more efficient method of producing rapid electrical sparks. The practical method of exciting them, at present employed in wireless telegraphy, is to suddenly interrupt an electrical current by mechanical means. Great interest has been excited during the current year by a chemical interrupter called the Wehnelt interrupter from the name of the discoverer. It consists of a plate of lead and platinum wire, both immersed in dilute sulphuric acid. An electrical current enters the acid by the wire and leaves by the plate of lead. The bubbles of gas given off from the point of the wire suddenly interrupt the flow of the

electrical current for an instant. This interrupter is placed in the primary circuit of a Ruhmkorf coil, and a torrent of sparks is produced in the secondary of this coil. The reader will understand that this same Ruhmkorf coil consists merely of a coil of coarse wire, through which the electric current flows in an intermittent way and a coil of fine wire which surrounds the coarse coil. The intermittent action of the current in the coarse coil excites sparks between the ends of the wire of the fine coil. Many papers have appeared on the Wehnelt interrupter and several modifications of it have been suggested. It unfortunately requires considerable energy to set it in action. What is needed in wireless telegraphy—is high electro-motive force and a quick disturbance of the ether. Some success has been obtained by the use of the Wehnelt interrupter in wireless telegraphy.

The subject of the X rays is closely connected with that of wireless telegraphy, for it is only another manifestation of electrical impulse or waves. The same energy which is manifested in the form of electrical sparks, and which generates electrical waves sufficient to effect electrical instruments thirty miles from the Ruhmkorf coil in which the sparks are excited, is also capable of producing the X rays in a vessel exhausted of air. While the waves which are instrumental in wireless telegraphy are between three and four feet long, those that are supposed to characterize the X rays are less than one hundred thousandth of an inch in length. When the spark which is competent to excite the long waves of wireless telegraphy, is discharged through a rarified space, the peculiar, pale, yellow light of the thus excited Crookes' tube appears; and it is no longer possible to send messages to a distance. In place of these messages there is given information in regard to the recesses of the human body, and various molecular movements are called into action which, if properly interpreted, would disclose to us some of the inmost mysteries. The investigation of the X ray phenomena has not been very active during the year 1898-99. Various attempts

have been made to prove that these waves are due to very short waves of light. No one has yet obtained conclusive evidence of this. H. Haga and C. H. Wind believe that the length of the wave is below one-millionth of an inch, and M. Maier gives a similar estimate. When we reflect, that wave-lengths of the luminous portion of the solar spectrum are in the neighborhood of one fifty-thousandth of an inch, we can form some conception of the small size of the waves which penetrate the flesh and throw shadows of the bones.

The practical use of the X rays has steadily increased, and every hospital now makes use of them to determine the nature of fractures of bones of the extremities of the human body. Unfortunately, not much advance has been made in the use of the rays to study the thicker portions of the human body. The practical range of the rays remains much as it was when Röntgen made his discovery. Skilled observers, however, can now study the progress of disease in the lungs and can investigate the movements of the heart. More use is being made daily of the X rays in dental surgery. The method employed consists in placing sensitive films, protected from moisture, in the mouth, and in exposing them to the rays which emanate from the Crookes' tube situated outside the mouth. X ray shadows of the teeth and jaw are thus thrown on the sensitive films. Many severe burns have been caused by the exposure of the flesh to the X rays. The effect seems at first to be like a severe sun-burn, but the injury is much deeper-seated and the injurious action is progressive: it seems to attack the organs of nutrition, of the tissues, and in many cases is very serious. The action can be prevented on the hands by wearing leather gloves, or by interposing a sheet of card board covered with powdered aluminum which is connected by a wire to the ground. The most surprising development of the X rays is in the discovery that they are given off by various substances, such as the salts of uranium and certain compounds from pitch blende. These substances have been classed under

the name of radio-active substances, and certain of them, in the form of powders strewn on card board, can penetrate substances opaque to ordinary light, like wood, thin sheets of metal, etc.; and can throw shadows of the bones of the hand on photographic plates. Indeed, they can produce all the phenomena of the X rays, including the lighting of fluorescent screens, the dissipation of electrical charges, and the rendering of air or gases better conductors of electricity. It would certainly be a strange development in the study of the strange Röntgen light, if the costly glass tubes, the induction coils for producing electrical discharges in these tubes, the batteries or dynamo machines should all be discarded, and if simple powders strewn on card board should come to suffice for locating bullets in the flesh or determining the nature of the fracture of bones.

Although we have not yet reached this practical development by the study of radio-active substances, we have greatly extended our conception of the nature of radiations, visible and invisible. One of the most mysterious features of the radio-active system is their power to emit the X rays without apparent loss of energy. They resemble magnets in exerting an effect without apparent diminution of their original strength. A certain sulphide has been obtained from pitch blende, which is more than four hundred times as active as the uranium earth which was first studied. This sulphide has been called polonium, and it is supposed to be a new metal. It is not characterized by new spectral lines which can be identified. This, however, can also be said of uranium, thorium, and tantalum, which give very fine lines in their spectrum.

Much interest has been awakened by the production of liquid air on a large scale, and various popular articles have appeared in American magazines describing remarkable experiments which have been performed by the aid of it. The articles have been as remarkable as the experiments, and certain loose statements have led to the hope that liquid air may have a commercial

future. These hopes have not yet been realized. The greatest use of liquid air seems to be in scientific investigation: by its aid Prof. Ramsey has added neon and metargon to the list of new gases. These gases were obtained by a species of fractional distillation of liquid air. The residue, after a certain duration of the evaporation, was examined; and in this way the lighter constituents of the air were separated from the heavier.

Spectrum analysis still continues to be a powerful method of investigation. In the hands of Prof. Crookes, it has added a new metal to the list of known metals. Prof. Crookes has called it victorium. The metal was obtained from the rare earth, yttria. In the Jefferson Physical Laboratory of Harvard University, instantaneous spectra of gases have recently been obtained. Formerly it was necessary to expose sensitive plates for several minutes in order to obtain a negative of a gaseous spectrum. It is now possible to obtain such negatives in less than a thousandth of a second. The heat of the electrical discharge which is employed for this purpose, is far beyond that previously obtained, and it seems possible to study under very favorable conditions the types of spectra presented by the stars.

Rubens has continued his interesting investigations of the red end of the solar spectrum, and by repeated reflections of heat waves from surfaces of quartz and the mineral sylvine, has succeeded in isolating very long waves of heat. Prof. Langley, who is also continuing his investigation of the red end of the spectrum, has succeeded in rendering his measuring instruments four hundred times more sensitive than the form he previously employed. The progress in photography may be said to be in the direction of the red end of the spectrum. The ordinary dry plate is sufficiently sensitive to the blue and violet rays. It is now possible to obtain plates which will also give the red, yellow and green of the spectrum, and the steady improvements in photographic processes leads one to hope that color photography may soon be realized. The increasing perfection of Biograph pictures

and the improvement in microscopes by means of which study of bacilli has been made possible, testify to the advance in the art of making lenses. Prof. Michelson has described a new spectroscope for the minute study of portions of the spectrum. It is competent to widely separate lines which seem single, into doublets and even triplets—in one sense, to perform the function of a microscope for the spectrum.

The student of light has been much absorbed by investigations of a singular action of magnetism upon light discovered by Zeeman. If the source of light is placed between the poles of a powerful magnet and is examined in the direction of the lines of magnetic force—and also in the direction of right angles to these lines—remarkable differences are observed in the character of certain lines in the spectrum of the light. What were considered single lines, become doublets and triplets, and a new method of analyzing vibrations of light results from the discovery of this phenomenon. The experiment supports the view of the electro-magnetic nature of light, and the result was predicted by Lorenz from a mathematical discussion of the electrical theory of light. Rhigi has also found that light is absorbed in a peculiar manner when the source is placed between the poles of a magnet. The student, in reviewing the work of the year on the subject of light, can see that the theory, that light and heat are electrical phenomena, is steadily growing in importance.

The rise in the price of copper has led to renewed interest in the metal aluminum as a substitute for copper; and it is being employed on a large scale. At Niagara Falls, great conductors of aluminum are used to transmit electrical currents from the power house to the works. These conductors are aluminum bars, twenty-five feet long, six inches broad, and one-quarter of an inch thick; four of these are rivetted together at the ends, and each group of bars is connected to aluminum cables; the core of each cable is about one and a quarter inches in diameter. The amount of aluminum in the conductors is twenty-two thousand

pounds. The same work in copper would require forty-eight thousand pounds. The conductivity of the aluminum compared with copper is sixty-three per cent ; but for the same weight, it is more than double. Aluminum cables require more insulation : but enable longer spaces to be used, thus reducing the number of poles and insulators. No practical method, however, has been discovered of soldering together bars or wires of this metal, and this fact is a serious obstacle to its rivalry with copper. The size of the cable in telephone circuits would be largely increased, if aluminum were employed, and an obstacle would thus be created to the perfect transmission of speech : for the electrical capacity of the line would be greatly enlarged. If aluminum should take the place of copper, most of the tools and mechanical appliances now used for working copper and brass, would have to be modified or changed, and this would lead to great expense. Aluminum, however, is much effected by moisture and by the salts contained in water and in soils. It has been discarded in the construction of yachts, especially in those parts liable to be wet by salt water. Vain attempts have been made to construct storage cells from aluminum in order to take advantage of its lightness ; but the results have not been successful. The disintegration of aluminum by liquids seems to be an effectual bar in this direction.

The progress of the practical uses of electricity continues to be a marked feature of the times. This progress is remarkable in the direction of the employment of alternating currents of electricity instead of steady or direct currents. The latter can not be transmitted without great loss or great expense from one station further than five or six miles. A to and fro current, on the contrary, can be sent thirty or forty miles, or even farther, and can be transformed into a direct current at the receiving station. This transformation is necessary at present ; for the electric motors on street railways are adapted for direct currents. This use of to and fro, or alternating currents, has led to the

utilization of water power on a great scale. During the past year, there has been much discussion of this comparatively new field in electrical engineering, and the technical journals have contained many articles on what are called polyphase motors, and the transmission of power by their means. The student of the applications of electricity must evidently devote himself assiduously to this new branch of the subject, for it contains far greater possibilities than the old method of direct currents. The subject is a difficult one, both from the side of theory and experiment, and to thoroughly digest the literature which has appeared during the last year on the subject of alternating currents, would absorb the entire attention of a competent student. When one reviews the progress of physical science in America, one must follow the practical applications of this science; for the employments of electricity on a large scale bring to light new phenomena, or shed powerful light on old ones.

In theoretical physics, the most striking hypothesis has been enunciated by Prof. J. J. Thomson on the size of atoms. His remarkable investigation of the action of the X rays on gases has led him to believe in the existence of masses smaller than the atoms. Several lines of research enabled him to determine the ratio of a mass of the atom to the electrical charge carried by the atom. This ratio was found to be about one-thousandth of that calculated from previous determination by physical chemists on the lines of the old hypothesis of the size of atoms. He therefore investigated the question whether the atom carried an electric charge greater than is required by the laws laid down by Faraday, or whether the charge is carried by only a portion of the atom—in other words, whether a small fraction of the atom which carries a negative charge can be separated from its mass. From his experiments, Prof. Thomson concludes that ordinary electrification consists in the removal from the atom of a smaller atom or corpuscle negatively charged, leaving the remainder positively charged. Attraction and repulsion merely consist then

in a surplus in any point of the mass, of an atom, or a deficit. This hypothesis makes the mass of an atom a variable quantity instead of an invariable one. Prof. Thomson believes that his view is supported by evidences from spectroscopic observation. A careful study of his researches and of those of his students, will convince one that the most brilliant work in electricity and the X rays, has been done in England during the year now closing. One is struck, however, by the fact that the X ray phenomenon has broadened so far as to include the subject of the ultimate constitution of matter.



ART AS A MEANS OF EXPRESSION

W. J. STILLMAN, *London.*



THE term "fine arts" is a tautology. All art is fine, because it is the effort to make whatever it is applied to, a more refined and attractive object. The fundamental purpose of the plastic arts is to decorate; of music to excite emotion, etc., and the term "applied arts" stands simply for the application to the useful, of a decorative form; that of "useful arts" being a misnomer and contradiction in terms. Our ordinary terminology regarding art is very loose; and the first thing we have to do, is to make it precise.

Undoubtedly, the primary function of art is that of giving form to the ideals and emotions of mankind. But to arrive at this generalization, it is necessary to take art in its broadest acceptance, and to study it in the most universal phases of the manifestation of its spirit, that is, those in which its influence is brought to bear on the least cultivated natures, and in which the analysis is least complicated with pure intellectual activity, or with the shaping of pure imagination, the intermingling of which elements greatly confuses the grounds of investigation, and introduces problems which, like that of the nature of the creative faculty and the nature of beauty, enter too profoundly into the

study of psychology to be brought into a generalization of ready acceptance. At the end of a long and animated discussion which I once had with that profound, if eccentric and sometimes illogical thinker, John Ruskin, he asked me for a definition of art, resulting from my conception of it. I gave him one, which he, at the moment, accepted, and he asked permission to use it in the work he was then engaged on, the third volume of the "Modern Painters"; it was this—"The harmonic expression of human emotion." He did not use it, for as one may see who reads his first volume, he had too deeply identified the representation of nature with art to reconcile it with his teachings. But to-day, I do not know how to put the definition better in a simple formula, though I should now add to it, that in a certain, and secondary, sense, art is also the expression, through the emotions, of the character of the artist; the outcome of his idiosyncrasy; the expression of his manner of feeling in the presence of the visible world; of his emotions under the influence of impressions of the sense, never of his intellectual operations. One of the profoundest observations of Herbert Spencer is that in which he says, "Ornament was before dress"; and, to give it a wider significance, I may say that the artistic impulse precedes all utilities. The shape it first takes in the child of any growth is the song or the dance, as may be seen in any proof before letters of any happy child. And the evolution of the child is the evolution of the race. Wherever any emotion is striving for utterance, it takes inevitably a rhythmic form, best recognized in music and in poetry, which is a form of music.

Science—knowledge—is common to all men, and invariable; it is in the emotional nature that men differ: the character of the emotion is that of the individual, and it is this which gives tone and character to the art, which determines the artist, and imposes itself on all the judgments and criticisms of his art as the element which gives precedence. Art is therefore, in the last reduction, the proclamation of individuality; and the stamp of

the art is that of the individuality, nature furnishing merely the pabulum, of which the art takes what it needs, or can utilize, in the work it has to do. But every definition fails, and they all fail, because the art which is the expression of individuality varies as the individual varies, and because the supreme Art, like the Ideal, has no concrete existence, and has never had one, and all that we know of it are but the indications which result from the varying characters of the men through whom we see it realized. The copyist, whether of nature or of other men, is no artist; but even in the most sincere copying of nature, the antithesis appears through the possession or non-possession of preferences, and of the sense of beauty, so that a spurious form of art arises even in photography, from which the term "art photography," as if one should say "the ideal-real," a contradiction and an absurdity, but which by analogy conveys its meaning. Language is our servant, in the detail, but in the widest acceptation it is our master, for let the individual put what meaning he please on a word, our conceptions of things, and much more our definitions of them, must depend on the law which the general conscience of mankind has imposed on us, until we have succeeded in obtaining acceptance for the repeal or modification of that law. What a word means, is what general usage takes it to mean, and neither logic nor metaphysics can limit its meaning except by general agreement. And so it happens that the word "art" is applied to every conceivable form of human workmanship; so that one has a *prima facie* right to say of a boot-black, that he is an artist in his way. But when we get to the bottom of this apparent absurdity, we shall find that it conforms to the secondary definition, as the expression of individuality, for it indicates that the boot-black has his peculiar excellence in his work, distinguishing him from the mere blacker of boots. William Page, one of the profoundest, if one of the most erratic thinkers on art I have ever known, used to say, that if any man would carry his occupation, whatever it might be, to its highest point of perfection, he would be the

most distinguished man in the world. In a sense this is true. No man could accomplish such a feat without throwing his individuality and mental abilities entirely into the work ; and the feat is so rare that it would certainly put one who accomplished it in the front rank of men, for the moment.

The expression of individuality in workmanship takes another, a broader, and, consequently, a lower form, through the distinction between what a man does for the love of doing it, and what he does because he must, the common metaphor for which is "drudgery" ; and art distinguishes itself as work which is done for the love of it, and thus is the index of individual character, because the basis of a man's life and character lies in what he loves, and does for the love of it ; and what he does for the love of it he desires to do well, which, with a mind that is susceptible of artistic activity, implies the artistic form of it. Art is, therefore, not merely the harmonic expression of human emotion, but, fundamentally, the index of human character, and the mind in which no artistic element exists, is either purely automatic or, as Shakespeare puts it, "fit for treasons, stratagems, and spoils" ; organically unproductive and existing merely in the plane of the physical existence. The ideal of existence is that in which each individual is engaged in the form of artistic activity inherent in the character. This is the theoretic, or ideal, state of art.

But in its concrete and realized state, too many diverse elements of intellectual activity combine in the result to admit of ready comparison and classification. The harmonic, rhythmic, melodic, or whatever other modification of emotional expression the impulse and creation may take, is the distinctly artistic element, by which *as art* it must be measured. In its combination with all the diverse elements which coöperate in the Work, it becomes Creation. The Greeks, in whom art had its purest form of evolution, and who had the simplest conception of it, as well as the clearest manifestation of its essential character which we know of, called art "making," *ποίησις*, and the artist

ποιητής, a maker, a creator; a form of speech beautifully employed by Lowell ("An Indian Summer Reverie") to indicate Deity :

"That portion of my life more choice to me
 (Though brief, yet in itself so round and whole)
 Than all the imperfect residue can be ;—
 The Artist saw his statue of the soul
 Was perfect ; so, with one regretful stroke,
 The earthen model into fragments broke,
 And without her the impoverished seasons roll."

In its highest concrete forms, art is so powerfully and intimately aided by, and welded with, other mental qualities that the study of it distinctively, becomes a matter of subtle analysis, so difficult, indeed, as to have given rise to the adage, "*De gustibus non est disputandum*," adage applied indiscriminately to all questions of preference in art, but which, if taken to mean more than that there can be no standard by which to discriminate between individual preferences, is an absurdity ; and this is probably the sense it had with its coiners. For of the comparative quality of works of art as exposed to criticism, every human being almost involuntarily undertakes to dispute and maintain his own standpoint—the act of judgment is as instinctive as thought. Certain philosophers carry the application of the adage to distinctions of the Beautiful, a region from which it is, logically, easily dislodged, though of the two main elements of mental activity which enter into and enhance the work of the artist, namely, the *sense of beauty*, and *imagination*, the perception of beauty is the most intimately incorporated with the art. The sense of beauty is probably in its origin a purely moral quality, which is the principal reason why it so completely evades intellectual analysis when investigated from the intellectual standpoint, while the imagination, rather than a faculty, is the spiritual nature of the man in its highest state of energy, involving in its complete activity every intellectual and moral faculty. The investigation of the nature

and function of either of these two elements of the general result of art-working, belongs to special studies out of place here, and rather to psychology than art, because, though the perception of beauty increases enormously the force of artistic expressions and the strength of the impression on the spectator, and, with the mass of people uneducated in art, constitutes their main attraction, this perception does not, in the least, legislate on the relative rank of any particular manifestation of art, or determine the rank of an artist, as such. A beautiful object causes emotions which, given the artist, may result in a work of art, but the art lies, not in the reproduction of the beauty of the object, which may be accomplished by photography, but in the harmonies of treatment, color and arrangement of line, which are due to the artist, and which are necessarily departures from the model. Literal reproduction of any aspect of nature is scientific representation, which is the antithesis of art.(1) Until this is accepted as a maxim in art-criticism, it will be impossible to establish sound critical canons. It is even untrue, that the possession of imagination, to whatever degree, affects the rank *of the art* of an artist, unless the purely artistic qualities are in due relation to the imaginative power, though imagination has *per se* a tendency to intensify all the other faculties, and, incidentally, the artistic, and has its vote in determining the intellectual position of the artist, but not the quality of his art. In the difficulty of determining the relative influence of these three elements in any work of art, namely, the rhythmic, the æsthetic, and the imaginative, consists the fallibility

(1) "In the works which interest us, the authors substitute themselves, so to speak, for nature. However commonplace the natural material may be, their perception of it is special and rare."—*Bürger*. "If one were to reason about painting, one would not dare to do anything. If you choose to reason before the works of the masters, you will find many things which have no *raison d'être*, and which are where they are, because they do well there. Art should obey sentiment above all, and not fear to set exactness and reason at defiance."—*Henri Regnault*.

of criticism; and in the diverse estimation of one, or the other, or all of them, lies the secret of the dissensions and contradictory judgments of the critics. For criticism, as well as art, is purely personal, and requires the gift, as well as the acquirements, as absolutely as does art, and being personal can never escape the partiality and fallibility of the individual. The occurrence of a great critic is probably a much rarer event than that of a great artist, and however partial the genius of the latter, he is always interesting and valuable when sincere, while the former must possess far more comprehensive gifts, and train them to the appreciation of the often antagonistic and apparently irreconcilable forms of art. An eminent American amateur and collector, the most generous of the patrons of early American art, and who possessed some of Thomas Cole's best pictures, told me that when Cole saw in his gallery one of the early, important, and most interesting pictures of Durand, which he had just purchased, he said, "How can you tolerate such mere naturalism?" (1) Such narrowness of appreciation should be an absolute disqualification for a critic, and yet nothing is more common in current criticism than just such bigotry, the result of the want of the science of art, which deficiency in no wise disqualifies the artist, but is fatal to the critic.

Art is, then, expression, and its nobility is determined by the nobility of the quality expressed. Its qualities are positive, and make no account of the defects which exist. In virtue of the single gift he possesses, we condone the artist all his vices and short-comings; weaknesses, we do not tolerate in the man of letters or the business man. The instinctive and often mistaken reverence we pay to the creative power, in *him*, as a partial incarnation of it, is even in the least cultured people, a curious

(1) This was a bigoted criticism. Durand was not an imaginative painter, but he had a very strong sentiment of the sunny moods of nature with very complete expression of it, and a feeling for color like that of the healthier Dutch artists. In invention he was weak, but he was no mere naturalist.

remnant of the innate and primitive worship of the creative power. The rudest and least cultured people will stand in wonder to watch a workman *making* something, and mystery in the making intensifies the awe, in the case of the artist, who seems to have re-created nature out of his own brain. Culture dissipates illusions; but a certain measure of reverence will always cling to the artist as a Creator, a reverence in all respects analogous to that which in all unsophisticated minds, and still more in sincerely religious minds, is paid to the Source of Being. In the earlier epochs of art, this analogy established an intimate connection between Art and Religion, and the root of this analogy is in the fact, that the art in one case and the creation in the other, are emanations of the personality of the Maker.

As a vital influence, therefore, something which has its roots in the primitive nature of man, and which grows and changes with its development, art is subject to the law of evolution that governs all life. Reference to the earliest stages of art in any antique field will confirm the dictum, that no art has had a durable existence which has not followed that law, and grown to maturity through a healthy infancy. And this is due not merely to the general law of progress, but to the fact, that art, unlike science, which bequeaths its results to the succeeding epoch of study, must always begin anew whenever the art-impulse takes possession of a people. It is only a naturalistic, or what we sometimes call realistic, form of art which comes into existence with all its motives fully developed, and this, again, explains why there are no new schools of true art, the scientific and realistic method of rendering nature (which has become the almost exclusive matter of art) not permitting the evolution through the primitive forms, or tolerating their undeveloped state. The subjective mode of communing with nature no longer obtains, except in a certain way with the poets, who are not yet subjected to the phenomena of the physical world.

It is a common illusion, that the first art-impulse derives, or

ever did derive, from the desire to represent nature; and ingenious critics have professed to follow the evolution of art from the rude representations of familiar objects. No doubt some of the first delineations we possess, have been those of the familiar objects with which the delineator had a certain sympathy, but the scientific tendency, as well as the artistic, precedes all our data regarding mental activity so long, that we are unable to form sound conclusions as to their relative origins, though we have sufficient evidence to show that art had its primitive *raison d'être* in the love of decoration; and its first work, in every case in which we are able to study it, is not in representation of natural objects, but in decorative arrangements of line and color, geometrical in the most naïve cases, and later, with unsymmetrical but rhythmical arrangements, and as the mental evolution went on, the use of natural forms and objects more readily supplying the material wanted than abstract inventions, and with greater variety than invention could discover, nature came in to furnish the vocabulary, but no true school of art flourished after it permitted nature to dictate its formulæ.

This historical fact furnishes us with the explanation of the decay of schools of art, beginning with the day in which they became dependent on nature—the model, and of the fact, that no new schools arise, our modern so-called schools being merely the repetition, with local and unimportant modifications, of the ripe results of the schools of the past. There is no longer a vital art-spirit except in barbarous countries, where the scientific tendency has no foot-hold. The Japanese school was the last, and even that, is now yielding to the positivism of the naturalistic tendency imported from Europe. I have under my eyes, as I write, a drawing by one of the most prominent painters of the new school of art of Japan, and it compares with a similar work of the early school as Caravaggio with Giotto. In purely decorative art, even, we go to the semi-civilized countries for the best; and Japan, in becoming imbued with a foreign civilization, and one,

therefore, which is not the spontaneous growth of the national character, already sees the decline of her art. In every age and nation where a true art has existed, its earliest and most naïve forms have been the most purely artistic, because they expressed best its aspirations and its poetry. The art-Eden, penetrated by conscious effort and foreign seductions, soon comes to bring only thorns and thistles and laborious effort, which is no longer the expression either of the poetry or the character of the people. Art cannot be imported, hardly grafted, and an exotic in that soil remains an exotic to the end of time. You can no more by drawing schools and drawing masters create a new art than you can by masonry, carpentry, and metallurgy make a new world. If the art has not preceded and evoked the masters, all their teaching is folly and artifice, which is that form of expression permitted to those who desire to hide, and not express their emotions or their characters. And the hopelessness of the modern civilized forms of art is shown in the universal tendency, in what aims to be its highest form, to mere naturalism; and in its lower (if there be in fact higher or lower), or those at least of simple decoration, to the barbarous substitution for forms of pure beauty, *feathers* and artificial flowers, signs of the lowest degradation of taste which any time has ever fallen on, and which in barbarous races even, has never obtained except in the savage races of America. A more absurd caricature of art than the dress, and especially the head-dress of our women, it would be impossible to contrive. But where art had a spontaneous development, a true evolution, its first appearance has invariably been in the most familiar objects of production, the dress they wear, and the implements they use; and all our best modern success has been in the emulation, or even in the bare copying, of the products of a stage of civilization we profess to have superseded, but which, in fact, we have missed entirely. If a healthy art be possible any longer under our form of civilization, it must be isolated and individual, for our modern education and habits of thought and life have made a true school impossible.

An isolated artist is still possible, for nature has a way of recurring now and then to the primitive type, producing suddenly what seems to be the survival of the archaic intellect. Should such a phenomenon now occur, we would probably proceed to cripple, mutilate, and finally stifle him, by sending him for his education, to Paris. There, every nature is hammered alike into the naturalistic mould, individuality degraded into eccentricity, and all the native impulses which might have blossomed into poetry are certain to be rubbed out, demoralized, perverted into *chic* and mannerism by the competition which stifles sentiment, and takes extravagance and insanity for talent. If art were any longer possible, this would be impossible. You can no more grow art on a naturalistic basis than you can grapes and figs on thorns and thistles.(1)

The advent of a true artistic nature, gifted with the possibilities of a great development would probably be a misfortune. We should not know how to let him alone. He would be put in some paralyzing apparatus like South Kensington art school, or possibly have a collection or a fund made to send him to Paris to be coopered like a Chinese lady's foot; and the only possible end would be that any healthy genius in him would be coddled to death. The epoch is against us, to begin with. What in humanity is best worth expressing in art, the serenity and the spiritual aspect of it, is being slowly exterminated (or hastily and

(1) The following passage from the writings of one of the most sensible and profound of the French critics, the late M. J. Milsand, is quoted in that admirable treatise on art, Hamerton's "Life of Turner". "We must have the courage to declare even at the risk of being misunderstood, that truth in the ordinary sense of the word will never be the aim of art, that the value which a picture may happen to possess as a means of making us understand the nature of realities, will never have anything in common with its value as a work of art. Let us be on our guard against the notion that truth is the pictorial element of painting; it is, on the contrary, the side by which pictures address themselves to the ordinary intelligence, to all the general faculties which the artist possesses in common with other men, but which are not his own soul as artist, not that part of human nature which he undertakes to express when he takes up his palette."

nervously exterminated) by our manner of living, by an education too wide-spread and too superficial, and total neglect of the moral nature, in which are the roots of all healthy emotion. And in suppressing healthy emotion, we exterminate the very germs of any possible art in the noble sense of that term. I am not a devotee of so-called religious art, or a believer in doctrinal inspiration of it. Saints and their doings may be celebrated in the most damnable caricatures of art, and be no more religious than a rout of bacchanals: and modern so-called religious art is, so far as I know it, either hypocrisy, dead formalism, or sheer ostentation, like most of the religion which calls for it, mere servile deference to superstition: and in the comparative study of the schools, ancient and modern, nothing is so difficult and so necessary as the capacity to distinguish between the formal and the devout, the sincere expression of the genuine religious emotion in the artist, and the attitudinizing of the insincere painter who comprehends only the external signs of a worship which is actually atheistic, or at best pagan.

The early painters of the great Italian schools, which by their intensity best serve us as examples, were mostly devout and sincere, therefore humble, worshipers. His dramatic feeling, the indispensable gift of the great painter of humanity, enabled the artist to identify himself with the worshiper and the action of the individual he depicts, in a way that no undevout man could do. It is this intense *spiritual* realism which, more than anything else, distinguishes the really religious painters of the thirteenth and fourteenth centuries from all their more modern imitators; and in the latter, it is not devotion, but conventional attitudinizing which we have to deal with. The really dramatic actor knows that there is a natural language of gesture, rooted in the correspondence between action and emotion, and which has nothing to do with conventions; and this language and all knowledge of it die out with the usurpation by conventional forms. A precisely parallel devolution takes place in religions. Leslie Stephen has

wittily said, that "religions die by being found out". This is in a sense true, if not precisely in that sense in which he said it—religion dies out by not being found at home. Andrew Lang has made a curious series of studies on religions, which, I think, proves conclusively that all the religions, of whose early condition we know anything, were pure and spiritual in their beginnings, but that they degenerated into forms and mythology as they grew old, that is, they became material when they had reached their term of development; and in accordance with the law of evolution, they became rigid and incapable of following longer the leadings of the true spiritual life;—they exfoliate, and are thrown off, being dead matter.

Here we touch the question, long and earnestly debated, of the relation between Religion and Art. The relation is not one of a true union and interdependence, nor is it true, that art depends, or ever has depended, on religion for its vitality. It is certainly the fact, that an earnestly religious man carries, and must carry, into his art the same temper with which he enters into his religion, but he may be eminently religious, in the most sincere and largest sense of the term, and have no sympathy with art, or, on the other hand, he may be, as Turner was, a consummate artist, following his art with the highest aims, and yet have no respect for religion; and we know that the highest attainment of a school may coincide with extreme corruption of manners and morals. But there is a close analogy in that they both follow the same law of growth and decay, and are both purely emotional in their origins. They both decay into pure formality—the one into ecclesiasticism and the other into academicism; and the early stages of both are marked by the same qualities of *naïveté* and sincerity, absorption of self in the work to be done, and vivid vision of the object of devotion. Later come vanity and ostentation with cooling of emotion, and formality, and externality. Schools of art and religions alike are born, flourish, and perish by the same formula—individuals alone may maintain their virtue

to the end, but for school or church, a new life demands a new birth. A certain appearance of continuity obtains again in both, and the new inherits the dead material of the old ; certain forms inhere, certain traditions are made over, like old clothes, for the uses of the new generation, but the life comes from a new inspiration, and the breath of inspiration comes from the Unknown. The evolutionary force is always present and always preparing, but appears by epochs. There is one law of life, and one law of death, to which all created, or to be created, things, obey.

But, I shall be asked, if naturalism is not art, what is it ? To return to my former analogy, I might illustrate (always reminding my readers that analogy is never complete, or a demonstration) its position by comparing it to art as morality compares to religion. Art in the pure sense of the word is absolutely independent of external nature, but in the concrete this condition is found only in music, in poetry, and the dance, natural and spontaneous expressions of human emotion. The main root of pictorial art is decoration ; and in its purest and most primitive form, namely, that of ornamenting the object of admiration with forms and colors, the forms and colors are conceived in reference to schemes of composition, with accords and harmonies, which, however crude, still support the principle which I have laid down ; it is the expression of the delight of the decorator in lines and colors disposed in certain formulae, just as rhythm and rhyme in poetry, and melody and harmony in music are expressions of their analogous emotions. But pictorial naturalism appeals to a different class of faculties, which belong to the scientific mind. So far as it is pure love of nature and the desire to reproduce natural truth, it is not, therefore, art. But in that secondary sense in which the art is expressive, not of the emotion of the artist, but of his character, naturalism permits a form of expression, never of the highest motives of art, but of qualities so completely analogous that the common consent of men, which determines the meaning of words, styles it art ; and we can not ignore

what the common consent decrees : it is applied art, that is, art applied to science, but generally simulating the qualities and forms of the purer art—individual in treatment and power, but unoriginal in its material, and therefore not creative.

But common consent is not critical, and its decrees are often expressed in terms that will not be found logical when subjected to analysis. If the simple reproduction of natural objects could be called art, we could not deny the claim of photography to be considered one of its forms, and yet, all competent writers on art reject such a claim. The reason is obvious—the absolute and faithful reproduction of natural objects is a purely mechanical process into which neither mind nor emotion enters—harmonies of form or color, if they exist there, exist by force of nature, and can not be entered to the credit of the copyist. So that even in the most naturalistic form of pictorial representation the quality of the artist is shown, not in the adherence to nature, but in the departure from her, that is, in the degree in which the individuality of the artist is impressed on his work. The energy and decision of the man are shown in his execution ; the correctness and lucidity of his perceptions, in the power and decision of his drawing, and his taste, in the selection of his subject. All these enter into the work and unite in the determination of its dignity, but the art of it is in the treatment of the subject so conceived, the harmonies in its color ; its composition, that is, the harmonies in its lines and arrangement, and in the secondary sense of which I have spoken, in the expression of individuality of the artist.

If this analysis should seem too fine-drawn in its distinction, I must refer the reader to music, which is the purest form of art, and in which nature enters for no part ; elements which enter into the representative art, and which have no analogies in music, being necessarily non-artistic elements. And an analysis which is not complete and exhaustive is worthless in criticism.

An incidental conclusion from my premises is that which at once stamps an affectation, or an assumed and borrowed style or

mannerism, as a spurious art, with which must be placed the so-called "impressionism" of late years, an affectation of the worst of qualities in art, namely, superficiality. All true art is the record of impressions, and all the good landscape painting of all time is but the expression of an impression, but, to my mind, no phase of art is so dreary and devoid of all poetry as this pretender to the exclusive possession of a quality, the highest in art, for with all its pretension it is not the expression of emotion, but the brain-trickle of indolence and imperfect vision. As will be seen, I am not a defender of the naturalistic school of painting, but that is at least the honest result of a mistaken view of art, and has when sincere, the precious quality of keeping us with nature, which to every pure and healthy mind is the nearest influence to that of art, and to the majority of minds, of greater value.

A sincere, original, and even eccentric, impression of nature or expression of her actualities, has an inestimable value in the scale of art-influences, and the greater value, as it is further from the ordinary type; but the taint of affectation poisons it so completely that we may say, that the affectation either of originality or of power (as shown in the simulation of masterly execution by laborious effort), or exaggeration of peculiarities, destroys the value of a work to the true critic as completely as a forged signature invalidates a cheque. And of all affectations that of "impressionism" is the most trivial and worthless. Any human work that is true (and therefore necessarily original) and earnest, however weak, has a permanent value to the race, a value proportioned to its strength and its originality, but the affectation of either of the qualities of art can only result in work that, however it may temporarily succeed when novel, is in time thrown into the rubbish heap. And the business of the art-critic is to detect those signs of insincerity and hypocrisies of the brush or modelling tool in the work, which can not escape the notice of the competent expert, and which are the permanent brand of futility.

As every great tendency towards art-production, developing in its growth a school, has followed the evolutionary law, from simple and childish becoming complicated and subtle, so in the individual artist the law works out its result; but that no great school arises in modern times (for the French school, which is the strongest, and answers best to the title of "school" is only a school of superficialities, with here and there a solitary individual who returns to the type, alone, unheralded, and if often mimicked, never reproduced) is due in most cases to the fact, that art has become so desultory an occupation, owing to the loss of its influence of ancient times, consequent on the development of the scientific spirit which ousts it from its former seat, that it is no longer regarded as an occupation, to which youths are dedicated, and sent to be educated, while the plasticity of mind, so necessary to the expression of the best qualities, remains. Modern artists are in the main amateurs who found their interest in art after reaching maturity, with a desultory devotion to it in the earlier years, and who, therefore, are not in a position to acquire the mastery of the art they follow. The high attainment in technique which is indispensable for the perfect freedom of expression of the proper motives of art, can thus never be attained other than exceptionally; and the artist, unable to express himself by the unconscious language of art, which must be learned, like all other languages, during the most plastic state of the mental faculties, is forced to recur to the model and accept its *pose plastique*. He leans on nature, because he has not the command of the imagery of his art. This is the inevitable cause of the incoherence and great inferiority of the modern "schools." The freedom and spontaneousness of art-expression are banished by the deference and constant reference to the dead facts of nature rather than to the vivid image held in the mind of the artist. The *model* and *anatomy* are crutches on which modern art limps along, in conscious, painful effort, where the artist of the fourteenth and fifteenth centuries moved on wings; for it is not

enough to have emotions to express—the outfit of the artist requires also the power of unconscious expression, that is, the power of putting into visible state his ideas without struggling over forms. A painter should no more be obliged to seek his means than a musician—the language he uses should be so familiar that it demands no effort or deliberation. In the possession of this gift, so rare in modern times, lay the secret of the supreme and masterly delivery of the early artists and their prodigious fertility. *We* go to work like foreigners who require to refer to the dictionary for the precise form and significance of their words, or who only recall them as the translations of the familiar terms of their native tongues. Ruskin, in one of those oracular sentences which in him are more puzzling than in any other great thinker I know, because they often contradict each other, has said, “in the accuracy and refinement of the instantaneous line is the claim to immortality laid.” This is a partial, because purely technical, truth. But it is true in the sense that only the great master of his art is competent to give expression to the idea that possesses him, with that rapid, unerring, and subtle line or touch which tells of the perfect possession of the idea and the perfect control of the hand, which we find in the work of Michael Angelo, Tintoret, Giotto, Titian, Velasquez, and even many almost unknown renaissance painters, and compared to which, the best work of our modern painters is labored and conscious, the result of effort to appear what the true master really was. Rapidity and refinement of line or touch alone do not make the master—they only furnish evidence of his possession of mastery of the technical outfit, which Giotto proved to the Pope by the drawing of his circle—I have known a very poor painter whose circle was as perfect and as rapid as Giotto’s could have been; but the Tuscan master had the ideas to express, which my friend had not.

It is probably as useless to attempt to revive art in our day as to construct a new religion. It may come, but not by seeking.

A state of society may arrive in which the social emotions will demand expression by art, and will command it. Practically, art is to the present state of our civilization a matter of archaeology—a thing to be studied in its past. In its vital and potential state, society at large not only has no need of it, but repudiates it. We look at nature, and we think of art, and the discord is unappeasable. There is no room in our social scheme for the influences of art except in personal and domestic decoration; and great and true decorations—for example the ceiling of the Sistine chapel—requires the great master as much as any other form of art, but the decoration we achieve, in our persons and our houses, proves that the roots of art are dead in our social state. What can be said of the absurd fashions of the day, which rotate and return on each other in endless repetitions of the same inane and artificial devices to attract attention by the display of novelty, which is no sooner become novel than it becomes wearisome from repetition, and which instead of being the expression of the tastes of the wearer are imposed by the *modiste*, whose only quest is to invent something new and unnatural! Here is art divorced from nature, but in a descending scale, into a degradation of art and cauterization of the sense of the beautiful. One has only to introduce the subject to realize how far from all art-possibilities is the present condition of civilized taste, on the deliberations of which we talk of founding or developing a new art! We may cultivate sporadic cases, exotic and phenomenal, and rave over them as we do over a new orchid, but so far as the general public is concerned, in absolute ignorance and unintelligent wonder, we can not change the atmosphere or the soil—and under present conditions, the plant won't grow.

So far as the art of landscape painting is concerned, it is right to say that the problem is a complicated one, for we can not dispense with a certain reference to nature, and the simple representation of the phases of nature at times so resembles pure art that it requires thorough knowledge and a careful analysis to distinguish

between them. (1) Taste enters for its legitimate influence, and we confound that with art—it is only an auxiliary to art; the share of imagination is still more difficult to eliminate from the sum. It is only by referring the solution to an absolute standard that we can correct errors in the analysis. In music we have that standard, and we have the strongest of analogies to assist us—melody analogous to composition, and harmony the same in both. But no one would suggest that an accurate report of a conversation between two lovers, in tone and word, could be substituted for a duet in an opera, or that a sweet-toned voice could be called music, except by metaphor. The most precise transcript of the most beautiful landscape is removed from art just in proportion to its precision, and if it were possible to produce, as in a photograph, an historical event with the greatest exactness of action and attitude, there would be nothing of the artist in it, but simple record, and as we have seen, the art lies in what is personal—in what the artist contributed of himself in the total. The simple statement of the case as between art and naturalism is this, then: In any work in which both nature and art have part, that which belongs to art is that which is not found in nature—that is, the more an artist imitates nature, the less art he gives us. Hamerton says justly, “Feeling in art, expresses itself *always* by the alteration of nature, by exaggerating and diminishing, by selecting and rejecting, by emphasis and accent.” Nature furnishes the crude material, the art lies purely in the shaping it for the common vision. When we hear one say, as we often may, “I do not know much about art, but I do know when a thing is like or not,” we may be sure that he knows *nothing* about art, and may know very little about nature, for even she, has mysteries not visible to careless or superficial vision.

(1) “We must understand that art and nature are not the same world, but two worlds which only resemble each other and have many things in common.”—*Hamerton*.

Of the training and early work, beyond a certain point, of the early painters and sculptors of the great schools of art, we know nothing. The evolution of the individual artist was so merged in that of the school that we can not trace it. But we do know of the earliest masters, that their work was purely subjective, that is, personal, and that the reference to nature, beyond the borrowing of types and symbols, was always indirect. It is evident that Giotto never used the model for his figures, and we have incidental information that the Greeks down to the time of Phidias considered the use of the model sacrilegious. The decline of art in every case of which we know the facts, began with the recurrence to the naturalistic method of study. And the reason is evident—as the artist began to lean on the external and actual for his inspiration, the spiritual and ideal faculties became atrophied by neglect, and the art gave way to the nature. The palace of art is a palace of dreams, and remains to us only in the imaging of its builders—no stone borrowed from nature's quarries fits into its structure—the incongruousness is irremediable. Nor is it in the power of scientific methods to so reestablish the formulas that art shall ever be made a thing of prescription and academies. It is inspiration or nothing. When we cease to regard the plastic arts in the same light as that in which we consider music and poetry, we lose sight of the only criterion by which we can estimate their real position. And here, again, we find the community of origin with religion, which was so powerful in the development of art, and which has been often mistaken for interdependence—in the additional evidence that both spring from the emotional nature. Until a revolution has taken place in the nature of the human mind, no nexus between science and either art or religion can be established, or the antagonism between the scientific and artistic and religious abolished. My personal observation leads me to conclude that the strictly scientific man has invariably a low, or realistic standard of taste, and invariably repudiates the purer forms of graphic art, and even in

the attempts to reach and develop the scientific analogies, as one must to work out the problem of artistic evolution, I am conscious in my own case of the alienation and paralysis of the artistic faculties. This is deducible from the nature of mind and the antagonism between the synthetic and analytic faculties, and partly explains the decay of the purely artistic faculties in the modern mind, outside of music, for the modern education involves performance a scientific and analytic tendency which is fatal to the inventive artist.

Leonardo da Vinci is one of the most important witnesses of the irreconcilable difference between the two tendencies. Born at an epoch when art or the priesthood were almost the only openings to a distinguished career for a man of intellectual ability who was born outside of the artistocratic classes, he was gifted with a mind of extraordinary activity and inventiveness, but overwhelmingly scientific in its tendency. His career, in our day, would have been that of a great engineer, and his mechanical imagination was one of the most powerful and far-sighted of which we have any record. Turned in the direction of the plastic arts, there was scarcely anything which he could conceive which he could not execute, but there was not in the artistic side of his nature the least tendency to idealism. As a naturalistic painter, he stands far in advance of all the painters of the Italian renaissance, and in purely intellectual power, his only peer is Michael Angelo. To the naturalistic school of to-day, wandering away from art in the same path which he led in, he is the exemplar amongst artists, but his nature was distinctly non-artistic, and what he achieved, great as it is in his own way, is the result of a forcing of his abilities into a channel which was not that he would have chosen, had all ways been open to him. His intellectual greatness is stamped on whatever he did, but that is not in the highest sense of the word, art. In the comparison with the great Tuscan painter, sculptor, and architect, he stands for the actual, Buonarrotti for the ideal; and the modern

realist generally abhors the latter and worships the former, as one would logically expect. In the form of art to which that of Da Vinci belongs, there is properly no infancy—it is born of the brain, and comes out like Minerva, fully armed, because it has its prototypes before it in actual vision—it depends on the model, and the normal evolution of the true art, which depends on the ideal, was wanting.

The antithesis to Da Vinci, antithetic in almost every conceivable sense, is the modern master, J. M. W. Turner. Da Vinci's compositions are studied out like his machines—built by judgment, Turner's, spontaneous as nature; Da Vinci's color shows the study of the tints of nature even through the conventionalities of the system in which he was educated (though probably not now as realistic as when executed), Turner's is a slow evolution from monochrome to the highest intensity of which the palette is capable, nowhere copied from nature, and in no tint even by chance faithful to her—"nature put him out"—and he in turn put nature out, as far as the analogies of art permitted. One of the most interesting studies which could be made in this direction would be the comparison, side by side, of drawings from every stage of the development of Turner's water-color, beginning with a delicate and suggestive pencil outline, just broadly washed in with india-ink, a little blue coming later into the skies and distances, and a brown into the fore-grounds, each deepening as time went on; and in the latest phase, when the courage of his convictions, based on his profounder perceptions came to him, it deepens and glorifies his art as the sunset glory does the day. And just as Da Vinci was inflexible to the idealistic tendencies of his time, and set a new standard in his art, so the great Englishman kept the bent and purpose of his ideal, always indifferent to the naturalism which was dominant all around him. Little men may shape themselves to the school to which they are sent—the great ones must obey the law of their genius, or become miserable failures.

The interesting attempt to force a school by artificial stimulants, which we know as the pre-Raphaelite Brotherhood, is a curious illustration of the uselessness of such an operation. A group of young men, recognizing the emptiness of the contemporary art of England, decided to go back to the original sources of artistic inspiration, as they supposed, and initiated a severe and uncompromising system of painting direct from nature, and, abandoning all conventions, most illogically entitled themselves followers of the schools prior to Raphael, under the mistaken notion, that the so-called primitives drew their inspiration from similar study, while they regarded Raphael, who perfected and confirmed the traditions by which his predecessors had been guided, as a renegade from the true religion of art. But Raphael was the logical and consummate result of the traditions which had been borrowed by Cimabue and the early Siennese painters from the Byzantines; and to have been in conformity with their professions instead of going to nature, they should have gone back at least as far as to Giotto and Duccio, who made the important, and, so far as we know, simultaneous, initial advance on the Byzantine traditions, and freed painting from the rigidity into which, as always happens in similar circumstances, the hieratic art had passed, and to the Pisani, who performed the same service to sculpture. But none of the painters before Raphael *painted* from nature, and while there is no evidence that prior to his epoch of art, any school, or portion of a school, had resorted to even the practice of making their studies direct from the model, it is certain that from the time of Cimabue to the day when Benozzo Gozzoli took a new departure in introducing portraiture, apparently drawn from direct study of his originals, no painter had set the example which the English pre-Raphaelites supposed they were following. They, in fact, set up the direct, lineal, and legitimate heirs of all the traditions of Byzantium as the exemplars of an art which denied all traditions, and protested against all conventions; taking their material crude from the actual, which,

as a system, none of the painters prior to Raphael had ever adopted, they proposed to found an art on the absence of art. There could not have been a completer misnomer than the title they adopted, and the attempt to found a school of which there were neither masters nor examples to teach, was of course a failure. The only quality in which they followed the primitives was in the earnestness with which they attacked their themes. Recognizing no authorities in art, they naturally went each his way, and, practically, the "school" dissolved as soon as it came into recognizable existence. Of the three most important members of the Brotherhood, Millais, Rossetti and Holman Hunt, the last was the only one to adhere throughout to the principle with which they started, carrying the principle of direct reference in nature for his material to a height which compelled him to go to Jerusalem to find a Jew for a model for his Christ, and to the most laborious and unimaginative employment of the actual supposed backgrounds in which were enacted events which owe all their force and value to mankind to traditions, in the most flagrant contradiction to the practice of the pre-Raphaelite painters whom he proposed to follow. Thus the appeal to sentiment, which is the prime *raison d'être* of art; and the liberty of the expression of its poetry and harmony, as well as the expression of the personal character which I have noted as the basis of the secondary art, were all sacrificed by Hunt to the record of facts of no sentimental or poetic importance, and to be relegated to history, archaeology, and geography for their interest.

Millais, no doubt, derived from the associated effort the highest advantage in the severe training of hand and eye which it gave him, but he was the first to abandon the principles which it had professed, and became simply a brilliant master of the brush, an admirable portraitist, and notable colorist, but in no wise a proof of the superiority of the naturalistic method of attacking art. Amongst his contemporaries, he was eminent, but it is to be doubted if in the great roll of English masters he will take a

place which will be in the front rank with Sir Joshua Reynolds and Gainsborough; and he will probably be reckoned as one of the most characteristic products of the peculiar English naturalistic tendency, reclaimed, as was said when he abandoned the manner of the Brotherhood, from the heresy of the new departure.

Rossetti, on the other hand, having the true artistic nature, at once found that the prescribed naturalism did not meet its demands. His earliest pictures were in conformity to the canons recognized by the Brotherhood; but even in them, there was a tinge of subjectivity which does not appear in either of his colleagues. Being, what no one of them was, a great colorist, he found the realistic dogma utterly insufficient to meet the requisites of his art, and at the same time that he found dependence on nature's fare too restricted in its objective, he saw that color was not to be found on her palette, but in the wider range of poetry, and he fell by the operation of the law of artistic congruity into the methods of thought and design of the early Italian schools. His genius was stronger than the creed with which he started, and though he never arrived at the mastery of design of the Tuscan schools, or the exaltation of color of the Venetian, he failed of them mainly because he had neither the early training of the great designers, and their consequent freedom of hand, nor the control of his palette which Titian and his contemporary Venetian painters had, because he had never learned the true method of painting. He felt this himself; and I have heard him admit it in his conversations on art. There is no question that Rossetti was an extraordinary phenomenon of the true artistic nature, and had he been in the school of the Bellinis, I have no doubt that he would have been one of the greatest of the Venetians. The possibilities of his genius are hardly comprehended, even by the generality of his admirers, and it was necessary to know the man and understand how the limitations of an imperfect training, in the least artistic of all possible environ-

ments, had cramped his native powers. Some of his pen-and-ink drawings, executed without reference to the model, in the true spirit of the primitives, seem to me amongst the most remarkable examples of imaginative design in existence. But it was only when he had cut himself loose from the dogma of obedience to nature, with which the Brotherhood set out, that he began to show his real genius; and the most remarkable of his followers, Sir E. Burne-Jones, who owed his first inspiration to the influence of Rossetti, was from the beginning, and even in his temperament, an idealist, and more akin to the early Italian painters even than his inspirer.

So it has happened, that the only organized attempt to revive art in our day, on the naturalistic dogma, a movement in sympathy with the scientific revival of thought in all directions of the last generation, has only produced, as serious result, work which belongs beyond dispute to the opposite tendency, and furnishes a new proof, that the way to graphic art does not lie through nature, and that it has no affinity with naturalism or science, but belongs to the emotional side of human nature like poetry and music, and must be governed and criticized by the same canons. But, like religion, this true art is rooted in the unconscious and involuntary regions of mind—conscious effort will not bring it out, and can not teach it how to grow. Its secret and its motive power are in the epoch, and when this is not propitious, the artificial stimulants we apply in academies and schools of design will only develop that secondary art which we find placarding Europe and America with its commonplaces, the art of the exhibition, the illustrated newspaper, and the guide-book. The social and intellectual conditions which would favor the genesis of a new art can neither be defined, nor, if defined, be created, for the prosperous moment probably depends on conjunctions beyond prevision. That the true art has generally had its beginnings in conditions broadly coincident with great religious vitality is a safe generalization, but the deduction from this,

that it owed its origin to the religious fervor is, I repeat, a mistake. I have shown that both art and religion have their bases entirely in the emotional part of man, and it is to be expected that the conditions of social existence which strengthen the emotional nature would be equally favorable to art and religion, for both exist as sentiment, and only as sentiment—canons of art and dogmas of religion are but death-masks—the moulds we make when death has supervened, and we desire to reconstruct by their aid what can not be reconstructed, and can only by the great first cause be renewed, not in the old body, but in a new one.

But with a sound psychology and a social science equal to our modern pretensions, we ought to be able to indicate the conditions which would be favorable to such a renewal. These are, I dare to say, the revival of the spiritual vitality in which all emotions and all pure aspirations are vivid and healthy, in which the real and eternal dominate in the minds of the generation over the temporary and phenomenal; in which the passions of the pursuit of material prosperity and artificial superiorities among men have no longer the mastery over society, and in which life is estimated, not by the fictions of its outer garments, but by the spiritual intensity of it. Art and religion will always co-exist when they exist, not in dependence one on the other, or because of each other, but because their springs are in the same region—the human heart. Intellectual science can no more give birth to either than social coddling can nurse them into vitality—we shall not be able to say, Lo ! here ! or Lo ! there ! when they come, for they will steal from some unexpected and humble quarter, and then the student will turn his back on the academies, and the worshiper on the temples, and the art and the religion will blossom into new life, which is the old life, in the new light, which is the old light. The spiritual man has, so to speak, his spiritual and his material side, the former is the religious and the latter, the artistic, for man's supreme existence is that of the

Maker, the image of his Creator: human life, as it tends to the ideal, develops into that of the true artist—all other work is for a side end, temporary and unimportant, that of the artist is done for its own sake alone; and finds in its doing its sufficient reward.



JAPAN'S ENTRY INTO THE WORLD'S POLITICS

PRESIDENT GARRETT DROPPERS,

University of South Dakota.

Late Professor in the University of Tokyo.



NE of the common topics of speculation at the end of the nineteenth century is the emergence of Japan from centuries of seclusion, her rapid assimilation of the ideas of Western civilization, and her final success, after less than forty years of effort, in establishing herself diplomatically on a footing of equality with the civilized powers of the world. The case of Japan seems a conspicuous exception to ordinary rules of growth. Other countries have undergone a long period of painful transition before shaking off the old bonds. Japan seems to have struck them off at a blow. All other countries, of what is deemed the civilized world, are either European or European in origin. Japan has the distinction of being the only Asiatic country which has cut loose sufficiently from its past traditions to embrace Western civilization, and, on the basis of this acceptance, to win by diplomatic skill a recognized standing in what is euphemistically called the family of nations.

To many who take a general interest in the modern trend of civilization, the case of Japan is at best a bewildering puzzle. While they can not deny Japan's success in her struggle for international recognition, they doubt the justice of her claim, and are inclined to ascribe her present position rather to the charitable

indulgence of foreign nations than to any merit of her own. Intelligent Americans or Europeans for the most part have the conviction that Japan, after all, is not a wholly civilized nation. An unconsciously condescending attitude of mind is evident whenever a traveler from a western nation visits Japan. He is highly entertained by the seeming pageantry of the daily life of the people, their queer customs, their strange dress and manners. On meeting the Japanese, he is most indulgent and polite; but he seldom treats the people as he would those of a western country. He can not get over the traditional feeling, that the Japanese are not quite human, not like the people he has been accustomed to associate with. Even Americans, who can not very well afford to sneer at the doctrine, that all men are created free and equal, and are supposed, in consequence, to be freer from racial prejudice than those of other nationalities, can scarcely, in ordinary intercourse, admit that the Japanese are of the same stuff as themselves.

The natural consequence of this traditional attitude of mind is the ever present doubt, whether the Japanese are really worthy of the position they have attained, though going merely by the books and magazine articles written concerning them in the past twenty years, no one would doubt that they are a gifted and highly refined people. Perhaps no other country has received so much unstinted praise in the periodical literature of the last two decades. But this is not enough to satisfy a native of Japan. He knows that the powerful and respected nations of the world are often criticized, and even bitterly attacked, for certain shortcomings. Nothing has less influence upon a sober and thoughtful Japanese than laudatory descriptions of the country and the people. He suspects that this sort of eulogy is not thoroughly sincere. It is like the applause that is given to a dog standing on his hind legs—nothing remarkable in itself, but remarkable for him. What the Japanese prize more than anything else is, in essence, what all people ask for, namely, recognition based on mutual res-

pect or equality. Failing to receive this, he prefers the severest criticism, if not made in a carping spirit. In fact, a Japanese resents the gushing attitude toward the art, the scenery, and the refined manners of his country, because he is aware that these are really not the objects of national worship in Occidental countries. The fundamental desire for equality stirs him more than any other ideal virtue or power. For instance, Japanese newspapers are incessantly urging the necessity of developing the national resources. Furthermore, young men in Japan, who twenty-five years ago would have despised business, are now thronging mercantile pursuits. But this emphasis of wealth does not primarily arise from a desire for individual gain, but is the result of a social feeling, which is an instinctive recognition of the exaggerated race for wealth in the present civilized world.

Whether Japan has performed a miraculous feat in establishing herself as a recognized power in the brief period of thirty years, or whether she has merely won a position that under normal circumstances belongs to her, is an interesting inquiry. The former view is generally present in the mind of the average American or European when the question fairly suggests itself to him, and consequently he makes a search to discover where and when the miracle was performed; not finding any clue, he is apt to think either the whole subject too difficult for solution, or that the Japanese have been a very lucky people. The other point of view, namely, that Japan has undergone a normal process of evolution, if it makes less appeal to the dramatic instinct, is certainly more in accordance with the great movements of history. In order to establish the latter, we must glance for a moment at the character of the Japanese and at the history of the country previous to the advent of foreigners.

Never in all his diplomatic struggles with the officials of the Japanese government did Commodore Perry make a shrewder remark than when he asserted, that "commercial isolation was in direct opposition to what history proved to be the natural tem-

perament and disposition of the Japanese people." Had Perry possessed an intimate acquaintance with the common life of the Japanese, he could have made an even more emphatic statement. He could have traveled throughout the length and breadth of Japan, and had the Shogun's government given him proper credentials, he would have found the mass of the population eager to see him, and the most intelligent, eager to question him about the life of the outside world. It is true, that during the two centuries and a half of Japan's isolation the laws forbidding any Japanese to associate with foreigners were mercilessly enforced, but the cases are not few when individual Japanese took great risks in order to satisfy their irresistible craving for some insight into the conditions of Western civilization. The very officials who authorized these restrictive laws, displayed, on convenient occasions, an unquenchable curiosity to get information from the technically hated foreigners, and, not infrequently, made hospitable overtures to them. Numberless instances from the pages of Kämpfer, Thünberg, and from the accounts of emissaries who, previous to Commodore Perry, attempted to force the Japanese government to reverse its policy of exclusion, prove that the Japanese used every pretext to overcome the disadvantages of their isolation.

The history of Japan from early times, in spite of appearances to the contrary, confirms the judgment of Commodore Perry. From the time that Japan was first influenced by contact with Europeans, namely, in 1542, when Mendez Pinto accidentally landed on the shores of Japan, until the year of expulsion in 1638, the Japanese not only came into familiar relations with foreigners, but emulated their enterprise after the most approved fashion. The religious orders of the Spaniards and Portuguese were welcomed both by the common people and the rulers. Every opportunity was given to foreigners for commercial and friendly intercourse. The Japanese, spurred on, no doubt, by the example of the Spaniards, Portuguese, and later, the Dutch, began to extend their trade in

all directions, to Formosa, the Philippines, the southern coasts of China, Siam, and even India. Toward the end of the sixteenth century, during the ascendancy of Ota Nobunaga and Taiko Hideyoshi, it would have been a fair judgment that Japan was destined to become a dominant commercial and military power in the Orient. At this period of her history, we find no hint from any European that any anti-foreign, or exclusive spirit, was manifested toward the nations of the West. On the contrary, there is every evidence that both the Japanese government and people extended a warm welcome to the newcomers. The trade that had sprung into existence was lucrative probably to both Japan and foreign nations, but unquestionably more so to the foreigners. All the signs of the times, in the latter part of the sixteenth century, pointed to the growing intercourse between Japanese and foreigners, and to the rapid expansion of Japanese power and interests in the Orient.

At the very moment, however, that the conditions seemed most auspicious, a strange and novel turn was given to the course of events in Japan. In 1585, Taiko Hideyoshi, the greatest warrior that Japan ever produced, proclaimed the first edict against Christian missionaries. Another followed in 1597. After the death of Hideyoshi, Iyeyasu, the first Shogun, Hidetada, the second, and especially Iyemitsu, the third Shogun, enforced the same policy with increasing severity. In 1609, under the combined authority of Iyeyasu and Hidetada, an order was promulgated limiting the tonnage of ships to 500 *koku* (3,000 bushels), the purpose of which was to stop foreign commerce. Finally, under Iyemitsu, in 1637-39, all foreigners were ruthlessly expelled, foreign commerce with slight exceptions was rigorously forbidden, and the Christian religion prohibited under penalty of death. The Dutch, who were allowed to trade to a very limited extent, were confined to a narrow quarter at Deshima, where they lived under rigorous inspection. The number of ships was gradually restricted, until at the time of Commodore Perry only a

single ship annually was permitted to enter the harbor of Nagasaki. Besides, a few Chinese vessels were allowed to trade at that port.

From this time (1637-39), for two centuries and a half, Japan remained closed to the rest of the world, though not absolutely isolated. From the Dutch, the Japanese government obtained a certain amount of information, and kept in touch with the great movements of Europe and America. Thus, the great wars of Europe in the eighteenth century were known to certain Japanese, and even the expedition of Commodore Perry in 1854 was not entirely a surprise to the Shogunate at Yedo (now Tokyo). But the vast mass of the Japanese people lived their lives, ignorant of the current of the world's movements. What speculation regarding this prohibited sphere existed, was dim and uncertain. Here and there, a keen curiosity still penetrated to some extent through the barriers, and now and then, a voice crying in the wilderness made itself heard. But these were rare exceptions. Never in any country, or in any period had there been established so orderly, so stable, so peaceful, yet at the same time, so languid and enervating a social regimen.

Many efforts have been made to discover the motive for this sudden change of attitude regarding intercourse with foreigners. It has been ascribed to the jealousy of Buddhist priests, to covert attacks made upon Roman Catholics by the Dutch, to the interference of the friars in the domestic politics of Japan, and to many other causes. A precise exposition of the true cause, or causes, of this sudden change of policy on the part of Japan is not of importance to us at present. The point on which all scholars are practically agreed is, that the act of expulsion of friars, the subsequent acts of the expulsion of foreigners, and the isolation of Japan, were for the most part government acts, acts, moreover, not inspired by hatred of foreigners so much as by fear of foreign aggression. As for the Japanese people, it seems almost impossible to find any trace of anti-foreign feeling

in them. From the time of Francis Xavier, who said, "They (the Japanese) are truly the delight of my heart," to the days of the expulsion of foreigners, we find both Europeans and Japanese living together on terms of cordiality and even intimacy. And when it is remembered what atrocities were committed in the name of religion in the sixteenth century by the most civilized nations of mankind, what cruelties and robberies were inflicted on defenceless people by the very nations who came to bear the cross and to preach the religion of charity, is it to be wondered at that the Japanese rulers, who were keen politicians in their way, were aghast at the chasm that separated the preaching and practice of western nations, and should have resolved on a policy of exclusion toward all the members of the hated sect of Christianity?

It was not until 1853 that Commodore Perry came to the shores of Japan with virtually a demand that she should reopen the doors she had so effectually closed in the sixteenth century. During this long interval, a new reason was gradually evolved in defence of her isolation, namely, that this had from the earliest times been the policy of the government. The title of prescription, "the time whereof the memory of man knoweth not to the contrary," was alleged as sufficient reason for refusing to enter into negotiations with the outside world. To all except a few scholars, whose numbers, however, gradually increased as the Shogunate neared its end, the former enterprise of Japan, and her contact with Europeans were no longer even a memory, or if remembered, they were distorted by legendary accounts of cruelty and barbarism. It was at this period of Japan's existence, when news from abroad never penetrated to the great mass of the people, that the fear of foreigners took its rise.

From this brief account, we may conclude that Commodore Perry was right when he declared, that Japan's isolation was rather an accidental measure of the government than an essential conviction of the natives. Had Perry never arrived, the opening

of Japan to foreign intercourse would have been delayed, but not permanently postponed. The elaborate feudal structure of the Shogunate was crumbling to pieces in the middle of the nineteenth century. The military classes were gradually becoming disgusted at the wearisome trifling that made up their daily routine. The historians and literary critics of the Empire were indirectly undermining the existing order by their studies of the past. Morally and politically, the august structure of Japanese society was falling to pieces just at the time that Commodore Perry came, in 1853, to propose a treaty of amity and commerce. Never before had Japan stood so ready to meet a new system of government, a new set of ideas, and even a new social order, as she then was.

The treaty between the government of the United States and the Bakufu, as the Shogunate was called, produced an extraordinary commotion in the Empire. There were many reasons for this, a few of which can be mentioned. In the first place, the Bakufu, at its wits' end after Commodore Perry's first visit, took the ill-advised course of asking the opinions of the Daimyos, or local lords, regarding the policy of reopening the ports. This proceeding, in itself a sign of weakness, gave an opportunity for almost every one to discuss the authority of the Shogunate. Secondly, growing out of this, the enemies of the Shogunate began to take courage and conspire against it. Two classes of men were especially hostile to the existing government. One class of patriots wished to restore the Emperor to his ancient rights as the real ruler of the country, and another, composed mainly of the powerful clans of Satsuma and Choshu, who had been defeated by Iyeyasu two centuries and a half before, and his successors, wished by restoring the Emperor to reestablish their authority in the central government. These two clans, together with some others, shrewdly took advantage of the reviving patriotic spirit, and made themselves leaders of the new movement. Finally, the conservatives made their voices heard, the

chauvinists, who were satisfied that the condition of Japan was superior to that of the West, and were bitterly hostile to any innovation. The leaders of the movement skillfully united the anti-government forces under the rallying cry of *Ō-i* ("drive out the foreign barbarians"). Throughout the Empire, there was plot and counterplot. The political *dolce far niente*, which had so long soothed the Japanese rulers, was suddenly converted into an extraordinary activity.

The treaty of peace and commerce arranged by Commodore Perry, and signed, March 31, 1854, requires no particular attention, as it was soon superseded by another, drafted by our first envoy to Japan, Townsend Harris, and signed at Yedo (Tokyo), July 29, 1858. The important items in this later treaty were, that Yokohama, Kobe, and Nagasaki were to be open to foreign trade and settlement; that foreigners must be tried in the consular courts of their own government established in these ports (the principle of extra-territoriality); that, finally, all import and export duties were, with a few exceptions, to be limited to five per cent. (This last provision was made more sweeping by the tariff convention signed, June 25, 1866.) In addition to these important provisions of the treaty, must be mentioned Article XIII, whereby it was permitted that "a revision of the treaty and trade regulations might be made upon one year's notice at any time after July 1, 1872, if desired by either party."

As a consequence of these provisions, foreign traders, Europeans, Americans, and Chinese, began to settle in these ports in considerable numbers. At first, Japanese officials made every effort to put obstacles in the way of trade, but the temptation of large profits to the Japanese proved too strong, and the trade grew year by year. Some reasons, however, for the early hostility to the new commerce were not entirely chimerical. The demand from foreign countries was for such commodities as were considered necessities of life by the Japanese—tea, silk, rice, and during the American civil war, raw cotton. All of these com-

modities rose rapidly in price to the serious injury of that great body of Japanese consumers whose incomes were fixed, and in exchange, the people received articles of no real utility, which merely served to tickle the fancy, such as toys and articles of luxury. To the sturdy Japanese patriot, the whole business was a sham, and seemed a proof that his country was to be exploited by strangers for their own benefit. The fact is, that in these early days, the Japanese had not adjusted their demands rightly so as to benefit by the new conditions. In addition, the rate of exchange between Japanese and foreign money was badly managed, and resulted in draining much of the gold from the country. There can be no question, that the attitude of foreign nations was often unnecessarily brusque at this time, and served to swell the indignation against the foreign barbarians.

Partly to satisfy these indignant and well founded objections, and partly to gratify a desire to study western civilization at first hand, several embassies were fitted out by the Bakufu government. One of these started in 1860, and consisted, all told, of some seventy persons. The ostensible object of this embassy was to exchange the new treaty of commerce, wrung from the Shogun government by Townsend Harris, but the real object was, no doubt, to satisfy a rising curiosity as to the character of western people and civilization. Though the political effect upon the home government was slight, the members were nevertheless convinced that their preconceived notions of foreigners were mistaken. The kind treatment they received at all hands struck them more deeply even than the wonders of a new civilization. Another body went in 1864, for much the same purpose. During all the closing years of the Shogunate, from 1859 to 1868, individual Japanese also found means of seeing the countries of the West, and their impressions were invariably the same. They were even willing to confess their mistaken prejudices against the outer barbarism. It is this catholicity of mind that in no small degree accounts for Japanese success in establishing a new order of

things in their own country. "Not foreigners, but we, are the barbarians," was the cry of many, in almost an excess of self-depreciation, when they learned that their country was not the measure of the world's deficiencies.

These years, from 1859 to 1868, were times of harsh experience for the Japanese people, especially for the ruling classes under the feudal regimen. The clans of Satsuma and Choshu, who had never been entirely reconciled to the Shogunate, took the lead in the *Jo-i* cry. Once, in 1863, on somewhat feeble grounds, an English squadron bombarded Kagoshima, the capital of Satsuma, and in September, 1864, an allied squadron composed of English, French, Dutch, and American men-of-war bombarded Shimono-seki in Choshu. The disciplined power of the western nations had great effect in converting the Satsuma and Choshu clans from their prejudices to an investigating turn of mind. How far these clans were influenced by anti-foreign ideas, and how far by a desire to embarrass the government of the Shogun, can never be settled. Probably these notions were confused in the minds of both the leaders and followers of these clans. This much is certain, that we find some of the most powerful men of this period accomplishing a complete *volte-face*. In 1865, the ministers of France, Holland, England, and the United States went to Kyoto where the Emperor, though with growing importance, still lived in seclusion, and demanded his signature of the treaties. When this was secured, the Emperor's real power was at once confessed, and the authority for the *Jo-i* party was diminished.

Toward the end of 1867, or the beginning of 1868, the Shogunate fell, and the Emperor was restored to power. This result was not accomplished without bloodshed, yet, when we consider the means at the disposal of the Shogunate and the authority it still wielded over the minds of many clans, the revolution must be accounted a peaceful one. What is most remarkable in the new government is the change of attitude toward

things foreign. So far, nearly all the leaders of the imperial party had been rigorous in their opposition to the pro-foreign sympathies of the Shogunate party. Though their opposition had declined somewhat after 1865, they still expressed no real change of purpose in their struggle to restore the Emperor to his throne. Even to the very date of the Shogun's downfall, foreign governments supposed that the Emperor's party would try to enforce the *Jo-i* platform. None had been so rigorous in their denunciation of foreign influence as the Satsuma and Choshu clans, and the cabinet officers of the Emperor's government. Yet, as soon as they secured the downfall of the Shogunate, these leaders began to push the pro-foreign policy far more rigorously than their predecessors had ever dared to do. Having once accepted the new point of view, the heads of the restored government feared no opposition. The Shogunate was powerless, the great majority of their own party would accept the view of the leaders and the Emperor.

The ease with which the old *Jo-i* party now became advocates of western civilization has never been satisfactorily explained. The secret will probably be kept until the chief actors of the Restoration drama have passed away. The truth seems to be that the leaders of the Satsuma and Choshu clans used the *Jo-i* cry largely as a political weapon against the Shogunate without any other motive than party advantage. They wished to oust the enemy from the seat of power, and were not over scrupulous as to what methods they adopted. The country was wrought up to an extraordinary pitch of patriotic enthusiasm. There was a strong awakening of the national intelligence, vaguely desiring a political renaissance, and centring its hopes upon the restoration of the Emperor and a settlement of the treaty question. The Satcho clans, to some extent, shared these vague aspirations, but at the same time skillfully took advantage of them, and when the revolution took place, it was found that the *de facto* government consisted of the Satcho leaders. "To the victors belong

the spoils," was not the outspoken theory of these clans—perhaps not even a conscious motive in their efforts to restore the throne. Nevertheless, they seem to have rewarded themselves liberally as soon as the victory was won.

The success of the Satcho clans in establishing their power in the new government is of great moment in the subsequent career of Japan, and her entry into the world's politics, yet it is one of the most neglected chapters of her recent history. Unquestionably, it is largely the ability wielded by the leaders of this combination that has brought Japan from insular seclusion to a world power, and yet not without great drawbacks to the character of the achievement. To-day, the leaders of the Restoration movement, the rulers of Japan for a quarter of a century, have no place in the affections of the people. Often, within this space of time, they have been bitterly assailed by representative men from all parts of the country. Some of the actors in the Restoration drama, who hailed from other provinces, as from Tosa and Hizen, have broken with the Satcho combination, and have antagonized its power, whether for good or evil. For this reason, the career of Japan, in the past twenty-five or thirty years, has not been as uniformly progressive as it might have been. On the whole, the conspicuous ability of the Satcho leaders has saved their government from disgrace. Their strongest claim for recognition, however, is the enlightened attitude they have taken toward western civilization and culture. Here, for the most part, they were clearly representative of the strongest and most enlightened public opinion of the nation.

Almost as soon as the new government was established in Tokyo, the leaders began to study the question of Japan's standing as over against western powers. It was apparently a clear conviction of these men, that in order to secure a position of equality with the great nations of the world, Japan must reorganize her entire political system. The downfall of the Shogunate in 1867 did not of itself mean the abolition of the feudal system. The

feudal lords now recognized the Emperor instead of the Shogun as their suzerain. The first step to be taken was therefore the establishment of a national in place of a feudal system. Between 1869 and 1871, this transformation was accomplished. The Daimyos agreed to yield their fiefs to the Imperial government. An elaborate system of local government was established, almost precisely on the model of the French system. The provinces were converted into prefectures, over which a governor was appointed by the central administration. Later, the prefectural laws were made by a local assembly consisting of a single body of representatives. Of these prefectures, there are forty-three, besides three municipalities, Tokyo, Osaka, and Kyoto, which possess somewhat larger powers of self-government. It will readily be seen that this reform was a prerequisite to subsequent measures. The Daimyos, who voluntarily abdicated, were afterward partially compensated for their losses by an issue of bonds, the interest of which took the place of the local taxes as a source of income.

Soon after the reorganization of the local government, another reform was introduced which, though likely to excite no attention in the western mind, was really an extraordinary step in advance, from the Japanese point of view. For centuries, the Samuari, or warrior class, of whom there were about two million, had worn two swords. They were, in fact, the most energetic and intelligent people of the whole population, and to them the sword, though for more than two centuries not drawn from the scabbard in actual warfare, was by tradition and teaching, the supreme badge of honor. The new government of Japan, with no little trepidation, in 1871, promulgated an order that the swords must not be worn by the Samuari, and it is a proof of the susceptibility of this class to modern influence, that the order was obeyed without the necessity of resorting to force. Other classes of men, to whom one or two swords had been permitted, easily yielded to the same order. In connection with these administrative changes, came

the abolition of the feudal classes, or castes, and a redistribution of the people on a more, though by no means wholly, democratic basis.

The years 1871 to 1885 constitute a period in which the Japanese government and people were making ceaseless efforts to put themselves in line with the main currents of western civilization. A mere enumeration of these reforms would make a long list. Detailed accounts of them may be found in special reports made by consular officials, or in general works devoted to the economic progress of Japan. Immediately after the various government departments were organized in the early years of the Restoration, one of the first measures introduced was a reform of the old coinage system and the establishment of a mint at Osaka, on the English model. The monetary unit adopted at this time was the gold yen of 25.72 grains, nine-tenths fine, while the silver dollar of 416 grains, nine-tenths fine, was coined for subsidiary purposes. Later, in 1878, the silver dollar was made full legal tender on an equality with gold, a measure that resulted in putting Japan on a silver basis until 1896. In 1872, the first national bank law was passed. A banking system on the American model was established, but because of certain limitations few banks were organized until 1876, when these limitations were removed. For about seven years, this system had complete control of the field, when a large central bank was established by the government with a view to retiring all notes issued except those of this bank. The first railway was built by the government, in 1871-72, between Yokohama and Tokyo. Other railways were planned from time to time, some by the government, some by private companies, until at present there are lines in all parts of the Empire. The telegraph system began in 1870, and was gradually extended, until now it is as efficient and extensive as that of any civilized country. It is entirely owned and controlled by the government. A postal system was established in the years 1871-75, under American advice. The

army and navy were organized during this period of preparation (1871-83). The army was finally fashioned on the German model, while the navy was copied from England. Not less attention was given to education at this time. A system of common and secondary schools was introduced for ordinary education, while normal schools and a well equipped university were not forgotten. Private schools, both for common and higher education, vied with the government institutions. The system of land tenure was radically changed. At first, all land owners were given title deeds on the English and American plan. Later on, the registration method was introduced, mainly on the Belgian system. The customs system was reformed. Weights and measures were carefully regulated by law. Finally, a complete code of laws based on the codes and laws of European countries was projected during this period. The penal code was put into force as early as 1890, the commercial code, about 1893, and the civil code, in 1898.

This enumeration is but a selection, and does not exhaust the list. One of the most important of the borrowed institutions introduced into Japan since the beginning of the Restoration is the written constitution and its guarantee of representative government. Even in the early seventies, there were a few far-seeing minds in Japan who penetrated into the mystery of the Satcho supremacy in official circles. These men believed that the new government could not be satisfactory until it was thoroughly representative and thoroughly national. They, therefore, began at once to agitate for a constitution which should guarantee certain rights to the people, and fix certain limitations upon the power of the government. Even in feudal Japan, there had been the nucleus of representative government in the gatherings of the peasantry, and in the village governments. In the seventies, the agitation for representative government resulted in the establishment of local assemblies in the prefectures and municipalities. About this time, in 1878, foreign influence acquired

strength and popularity in Japan. Foreign institutions were eagerly studied to the disparagement and neglect of many Japanese institutions that were good in themselves. A systematic agitation, of which such men as Count Itagaki and Count Okuma were leaders, was carried on until even the Satcho officials saw they would have to bow to the inevitable. Through the efforts of Count Ito, the most liberal, perhaps, of the Satcho leaders, a constitution was drawn up and promulgated early in the year 1889. It is formed, for the most part, on the model of the constitutions of continental Europe, especially those of Germany and France. The first meeting of Parliament under the constitution took place two years later. Any one understanding the history of the Japanese government since the coming of Commodore Perry, and especially since the beginning of the Restoration, could have foretold that the parliamentary sessions would not be lacking in bitter recriminations between the government and the representatives of the people. The avowed object of the vast majority of the members of the lower house was to oust the Satcho cabinet from its firm seat in the government. Those who have followed the history of parliamentary government in Japan without this key in mind, find it a maze of contradictions. Again and again, has the government suspended the lower house for contumacy, and with every suspension, a new body of enemies returned to the charge, until finally, in 1898, the government of Count Ito resigned to make way for a strictly party cabinet. Internal dissensions, however, within the new cabinet, and the skillful efforts of the Satcho leaders restored the latter once more to power, in the autumn of the same year. What intelligent explanation can be given for this rapid assimilation of western institutions and culture? Are we to assume that the Japanese have a peculiar gift of imitation not vouchsafed to other nations, or can we postulate some more intelligible grounds for her progress? Imitative capacity, the Japanese undoubtedly have in sufficient measure, but probably not more than people of

other nationalities, who borrow the inventions and assimilate the ideas of other nations. Perhaps, in the attempt to explain Japan's success, we shall attain to a juster conception of her indebtedness to western powers, and also of her own inherent capacity.

Many of the institutions which Japan is supposed to have copied from the West are rather modifications of those long existing in the country, than bald imitations. For instance, banking in a rudimentary way was well understood in feudal Japan, and was carried on in the commercial cities of the Empire, notably Osaka. Inconvertible notes had been issued by the clan governments long before the advent of Commodore Perry. It has already been mentioned that the beginnings of representative government existed in the agricultural and urban districts. A postal system for the conveyance of government dispatches was carefully organized. Institutions of learning were established in very early times, and flourished in many parts of the Empire during the Tokugawa regimen. Military training was developed to an extraordinary degree of perfection under the successive dynasties which had governed the country in the name of the Emperor down to the period of the Restoration. In all the higher realms of thought and feeling, in poetry, painting, religion, and even in science, the Japanese seem to have accomplished wonders when we consider their remoteness from the stimulating influences of all nations except China. In the development of a highly organized and balanced order of society, they showed something akin to genius under the peaceful rule of the Tokugawas.

It is doubtful whether an intelligent Japanese, coming to America or Europe, after the opening of his country, would have been surprised at any of our boasted superiorities, apart from our mechanical inventions, and the magnitude and perfection of our material development. It is on record, that one traveler in the early sixties, who braved death to see America, was, of all things, struck

most by the postal system, its cheapness, its speed, and the scale on which it was carried. But he was as familiar with the idea of a government post in his own country as any American could be. What Japan lacked more than anything else, when she first came into rivalry with foreign nations, was the development and modification of the simple institutions which already existed in the country, rather than any new adoption of them. Hers was a case of arrested development, and not an incapacity for inventive power.

As it was, the Japanese who went abroad saw at a glance how they had been surpassed by foreign countries during the period of isolation. They are a people endowed by nature with a keen social consciousness—with a sensibility for what are the real and not the pretended preferences of people, with a love for equality, for what the world considers worth while. Some people, by centuries of misrule, of tyranny, or of ecclesiastical hierarchy, have their humanity crushed out of them. They become fatally discouraged. The Japanese, in the long period of their isolation, seem to have kept their human point of view essentially intact. The rulers were unquestionably demoralized by sensual indulgence during the peaceful era of the Tokugawas. They were physically and morally bankrupt. But the great mass of the common people and the Samuiri retained a vigorous hold on life. Especially among the Samuiri, there was smouldering a love of adventure, a curiosity for all sorts of knowledge, an impressionability to the progressive phases of that common humanity in which we all live, and move, and have our being. When, therefore, the secret leaked out, that foreign nations were not weak and barbarian, when the intelligent minds awoke to the intellectual and economic activity that was going on in the great world beyond them, they had no temptation whatever to deceive themselves, to take refuge in mere chauvinism, or in boasting of their past greatness. They acknowledged their mistake without equivocation.

It is this receptivity to impressions, this desire for social recog-

nition and respect, that have been the most potent causes of Japan's constant effort to put herself in line with western standards. From the moment that the Japanese saw that the great world was no longer China, that China was a mere backward eddy in the great stream of the world's progress, from that moment, they deserted the Chinese standard, and put themselves in line with the West. This in itself was a step that required some courage. From that moment, China became the enemy of Japan. The government of the former country steadily pursued a policy in which contempt, hate, and an over-bearing *hauteur* toward Japan, were all ingredients. In Korea the opposition between the two countries was keenest, Japan wishing an ally in her new course of development, while China was determined to assert her supremacy as a defender of conservatism.

This fundamental difference in point of view between the two nations was the real cause of the Chinese-Japanese war. Even the diplomatic correspondence between the two governments reveals the true state of things. When the Chinese government declared that it was sending soldiers to Korea to assist the Koreans in putting down the Tonghak insurrection, the Japanese took the enlightened position, that if the two governments were to assist that of Korea in stamping out rebellion, they would be responsible for the acts that had caused this rebellion. Accordingly, Japan shrewdly invited China to join her in establishing certain radical reforms in the peninsular kingdom. To this invitation, China could not consent for the evident reason that her own government was afflicted with the same corruptions as those which existed in Korea. Japan, therefore, determined to insist upon the reform programme, and if necessary, to carry it out alone. At the bottom of this diplomatic struggle was a trial of strength between the old and the new in the Orient—a trial that never can be fully understood by a European or American, backed up as he is by a united public opinion of which he is largely unconscious. Throughout the pre-bellum negotiations, the Chinese officials

took an offensive *de haut en bas* attitude that the Japanese could not brook. We can understand this resort to war all the more clearly, if we bear in mind, that some of the highest English authorities predicted the utter failure of Japan in her encounter with the leviathan of the Orient. The Japanese felt that they must have a vindication before the world, and when the war was over, they received it in overflowing measure. The very powers which had most questioned their supremacy now flattered them beyond reason.

In the peace negotiations between China and Japan, we may note that the Japanese delegates insisted upon the same point of view, namely, that they wished their country to be part of the great current of the world's history. One of the well understood devices to which China has often resorted in order to win a diplomatic victory, is to send out emissaries without proper credentials. In this way, the government has frequently been able to gain time, and afterward to repudiate the authority of the emissaries. Such an embassy was dispatched to Japan during the war. At the head of this fraudulent body were Chang In Hoon and Shao Yu Lien, to whom Count Ito, on the 2d of February, 1895, addressed the following characteristic words:—

“China has hitherto held herself almost entirely aloof from other powers, and while she has in some instances enjoyed the advantages accruing to her as a member of the family of nations, she has, perhaps, more frequently denied the responsibility of that relation. She has pursued a policy of isolation and distrust, and consequently her external relations have not been characterized by that frankness and good faith which are essential to good neighborhood. While Japan has found no reason to approach China on the subject of peace, she nevertheless feels bound in deference to that civilization which she represents, to listen to any *bona fide* overtures which China may advance, but she will decline to take part in the future in any fruitless negotiations, or to become a party to a paper peace. The terms which Japan agrees to, will be scrupulously observed by her, and she will at the same time insist upon a like observance of the terms by China.”

These sentences reveal the purpose that has guided Japan in all the reform measures she has adopted since 1868.

Finally, this desire for being part and parcel of the great current of civilization has guided the government of Japan in her struggle for recognition as an equal of other powers, and her unceasing diplomacy to gain this object. It has been already mentioned, that the treaty of Townsend Harris made two peculiar provisions, namely, extra-territoriality, and a very low tariff duty. Both of these provisions were, to a certain extent, derogations from the complete sovereignty of Japan, within the meaning of civilized nations. The struggle for a treaty revision, after 1872, with foreign governments was unremitting. "Liberty," says Burke, "inheres in some sensible object." Similarly, sovereignty, in the modern sense of the word, must have definite forms and tests. Among other accepted indications of the complete sovereignty of a government, are tariff autonomy and unlimited judicial power over all cases within the national territory. Both of these powers were wanting to Japan. She was bound by the Harris treaty to a fixed rate of duty on imported commodities, and all cases in which foreigners were defendants were tried in the consular courts of the respective nations of which the defendants were subjects or citizens. Even in the seventies, attempts were made to revise the Harris treaties, especially in the two provisions mentioned. Cabinets were wrecked on the point of treaty revision, until finally the Japanese people began to regard the subject with a kind of dull despair.

In a material or economic sense, there was very little to gain by the abolition of the consular courts, or even by tariff autonomy. Under the former, the Japanese government was relieved of the expense and trouble of administering justice in a large number of cases. Under the latter, it is certain that the foreign trade of Japan expanded with great rapidity. Within a decade, 1888-1898, the total value of Japanese imports and exports had more than quadrupled. Japan had little or nothing to gain in a material sense, therefore, in her effort to regulate her internal affairs to suit herself. At the bottom of this struggle for treaty

revision, was not an economic purpose, but an ideal one—a claim for equality, illustrating in its intensest form the desire of the Japanese for recognition and respect. In 1888-89, Count Okuma, the then prime minister, arranged the terms of a revised treaty with the various plenipotentiaries of the great powers. The basis of this treaty was complete autonomy in matters concerning the tariff, but in the matter of extra-territoriality the Japanese agreed, for a limited number of years, to have foreign judges on the bench whenever foreigners' rights were involved. This arrangement at first seemed satisfactory, but on second thought, the Japanese came to the conclusion that the provision for foreign judges, even for the brief period of ten years, was derogatory to the country's prestige. An organized opposition to the signature of the treaties was started. The excitement grew to such an extent that finally a fanatic threw a bomb at the prime minister, who escaped with the loss of a leg. The revised treaties were withdrawn.

In 1893, the cabinet of Marquis (then Count) Ito again took the business in hand. On this occasion, the Japanese government negotiated directly with the governments of the great powers without appealing to the representatives of those powers in Tokyo. After months of diplomatic interchange, revised treaties were finally agreed upon, first a treaty between England and Japan, next between the United States and Japan, then Germany, and, finally, all the powers. The revised American treaty was signed at Washington, November 22, 1894, and ratified by the president, February 15, 1895. In all these treaties, Japan finally gained what she had been long struggling for, namely, complete autonomy, both in the system of tariff duties, and in the government of the treaty ports. The treaties were to go into force, July 17, 1899, except those of France and Austria, which were delayed less than a month by certain formalities.

Japan has, during the last year, reached the goal of her ambition. She now stands on a footing of complete equality

with western nations, having all the rights and privileges of a great and civilized power, having also the responsibilities and cares that go with authority. She will be judged, and justly judged, by exacting standards of criticism. As she is apparently a notable exception to the rule of nations, her actions will be more minutely scanned than are the actions of those nations which have an acknowledged reputation and position in the political system of the world. The crux of Japan's success will lie in the administration of justice. In ordinary cases, the judicial decisions of her courts will doubtless be intelligent and impartial, but whether the judges can maintain a judicial attitude in the stress of party passion, especially if some semblance of a patriotic motive be involved in the case, remains to be seen. Every nation prefers to administer its affairs in its own way, without too much advice from foreign nations. The relations between foreigners and the Japanese have always been somewhat delicate, and foreigners have not hesitated to speak out their minds in vigorous language, knowing that they were protected by their own courts. They will scarcely do less, now that they come under Japanese jurisdiction. They will look for flaws in the administration of the courts, until it is demonstrated beyond a doubt that they can entirely rely on the impartial character of the decisions. Japan thus will still remain to some extent a marked country, a conspicuous object of scrutiny to a large body of foreigners living within her territory, who have always objected to any government except their own.

The point to be remembered at the present stage of Japan's history is, that her success in securing autonomy has not been an isolated fact, but is connected with a continuous series of efforts to put herself in line with the great world outside, and its leading tendencies. At the bottom of all her struggles, in the past twenty-five or thirty years, is a fact of spiritual significance, of importance to all nations and peoples. We see this influence working during the present century in Germany, Italy, in the United States,

and other countries. Fifty years ago, the average German who emigrated to a foreign country had borne from his youth the yoke of an oppressive social order which had destroyed his patriotism, and against which he was in open rebellion. He sought elsewhere those rights which he despaired of obtaining at home. But to-day, the German, stands erect, in his own land, and meets the world face to face. He has become the "citizen of no mean country." He is a part of a whole that is able to defend him, that he has helped to defend. The same influence that has made Germany a great and respected nation at the present day, has caused Japan to establish railways, schools, codes, finally tariff autonomy, and the abolition of consular jurisdiction. Contrary to a certain kind of popular political reasoning in America, a man is, in a measure, what his government makes him. There is a constant interaction between the powers of the government and those of the individual. For this reason, the Japanese have aimed to bring their country to the level of the great nations of the world. They frankly aim at power, because power is one of the objects of national worship—even the brutal exercise of power has an influence upon the imagination of mankind. Japan has not aimed higher than the source of these agencies. She has not stood for reforms that still remain in the nebulous state of convictions and agitation; she has not striven to establish Utopias; she has passed few laws that have not been copied from foreign countries. Her aim has been to put herself on a level with the advanced nations of the world, and nothing more. Consequently, we can see in the Japan of to-day a fair reflection of western institutions and culture. She has not had time to spare for experiments in the higher forms of social and spiritual life. But her position is intelligible. She can not, as yet, afford to take the risks that nations like England, France, or even the United States, can or should take. She can not, as yet, take the lead in the world's progress, but merely keep step with the rank and file. Her aim is, and should be, not to be an

agitator or reformer in the commonwealth of nations, but a respectable citizen, until the time arrives when she can fully meet all the rules that are commonly applied as a test of independent capacity.



THE OPERA IN AMERICA AND EUROPE

HENRY T. FINCK, *New York.*



CHICAGO claims a population of two millions, and it is estimated that among these, there are perhaps four hundred thousand who were born in Germany, or born in America of German parents. The Germans are certainly more devoted to good music than any other nation in the world, yet when Mr. Maurice Grau invaded Illinois with an opera company which New York had patronized to the extent of nearly a million dollars, leaving him a clear profit of one hundred thousand dollars, Chicago, with its hundreds of thousands of Germans, treated it with such neglect that Mr. Grau solemnly resolved that he would never go there again. Last November, nevertheless, he made another attempt, changing his tactics by taking his company to Chicago before the New York season; thus silencing the objection, that he did not give Western audiences a chance to hear his singers, until their voices had been worn out by four month's work in New York. Again, however, his expenses exceeded his receipts, and this time, he was charged with the crime of taking his company to Chicago first, in order that the performances there might servè as rehearsals for New York!

The indifference shown towards Mr. Grau's company in Chicago seems almost incredible when we look at its make-up. No opera house in Europe has half as many singers of the first rank as he took West in November. The names of the prima

donnas alone would take away the breath of opera-goers in any European city. There were not only the two most eminent American singers, Mmes. Eames and Nordica, but five of the foremost German and Austrian artists of the century: Mmes. Sembrich, Ternina, and Schumann-Heink and MM. Van Dyck and Dippel; the two French tenors, Saleza and Salignac, and the great Plançon; the admirable baritone, Signor Campanari, and the incomparable bass, M. Edouard de Reszke. Besides these, there was Mme. Calvé, whose magic art alone should have filled the auditorium every night. In the preceding season, illness had considerably reduced the number of sopranos, and the failure in Chicago was, by some, attributed to that; but this time, the list of sopranos was exceptionally strong—Calvé, Sembrich, Ternina, Nordica, Eames—yet the result was even more discouraging. Nor can the failure be attributed to the absence of M. Jean de Reszke, because his presence did not save the preceding season, though in New York his name in the cast makes a difference of at least three thousand dollars in the receipts.

One of Mozart's most famous and popular operas, *Le Nozze di Figaro*, was given in Chicago with a five thousand dollar cast, including Emma Eames, Zélie de Lussan, Sembrich, Campanari, and Edouard de Reszke, yet the receipts did not much exceed one thousand dollars. The mystery deepens when we hear that the highest price for a seat in Chicago was three dollars and fifty cents, as against five dollars in New York, and that while Chicago was deaf to all appeals, New York subscribed, in advance, nearly four hundred thousand dollars to hear these same singers.

When the result of the Chicago season was telegraphed East, various conjectures were offered as to the cause of the failure. One of the most plausible of these, at first sight, was that Chicago, like Boston, preferred concerts to operas, Theodore Thomas to Maurice Grau. But Mr. Grau had actually incorporated the Thomas orchestra with his company during its stay in that city; and, as for Chicago's love of concerts, the less said of this the bet-

ter. It is true, that some public-spirited rich men and women engaged Mr. Thomas, and provided the means for the establishing of a first class orchestra. But if these same individuals had not been willing to make up a huge deficit every season, these concerts would have soon come to an end.

The plain truth is, that the populace of Chicago, like that of most of our cities, does not care to support good music, for the simple reason that such music gives it no pleasure, being, in fact, more apt to bore it. Why pay three dollars and fifty cents to hear a grand opera which they do not care for, when for one dollar and fifty cents, they can hear a tuneful operetta which appeals to their taste? Even in Germany, *The Geisha* and *Die Fledermaus* had, last season, respectively, four hundred and thirty-six, and three hundred and four performances, as against two hundred and seventy-three of *Tannhäuser*, and two hundred and sixty-seven of *Lohengrin*, the two most popular of grand operas. It is true, that Frankfort-on-the-Main, for example, with a population of only three hundred thousand, supported three hundred and nineteen performances of grand opera, from November 1st, 1898, to November 1st, 1899; but it must be remembered not only that the inhabitants of German cities have been educated to that sort of thing for centuries, but that the proportion of cultured people is much larger than in Chicago, where, as in New York, the Germans mostly belong to the lower strata of society. Many have become rich; but in the struggle for wealth, they have, like so many Americans, neglected culture, musical and otherwise.

If Mr. Grau has fared so badly in Chicago, why does he persist in going there? Partly because he is a theatrical speculator, and, like all speculators, he hopes to win next time; more particularly, however, because he is obliged to offer eminent singers a certain number of performances to induce them to cross the ocean; and as New York keeps them busy only four or five months, he has to take in other cities, even at the risk of some loss, which New York usually indemnifies generously. Some

of these cities are even less favorable ground than Chicago, because they have no theatre large enough to make it possible to charge reasonable rates for tickets, while a few seem to have a constitutional aversion to opera—Boston, for instance, which, no doubt, is honestly proud of its symphony concerts, and supports them nobly, but has no ear for dramatic music. Boston, to be sure, has no opera house where such music can be heard under the most favorable conditions; but that is no excuse for contributing an audience of only nine hundred—the same number as attended a Kneisel Quartet Concert the same evening—to a performance of *Siegfried* which could hardly have been equalled at Bayreuth, and which was presided over by no less a man than Anton Seidl.

Philadelphia has been making an effort in recent years, to become operatic, and New Orleans has had, for many years, French opera companies that are well spoken of. But, compared with European standards, New York remains the only American city that deserves serious consideration from an operatic point of view. Brooklyn is now a part of New York, and it doubtless contributes a certain number of names to the Metropolitan subscription list; but apart from that, there is so little interest in opera in that borough that Mr. Grau hardly finds it worth while to haul his scenery across the big bridge, once in a while, for a performance in the Academy of Music, the best place to hear music in Greater New York.

While opera doubtless prospers in New York at present, it is well to remember that this has not always been the case. Last season, Mr. Grau cleared a hundred thousand; but in 1884-1885, the firm of Abbey & Grau lost a quarter of a million in the same house, and with a galaxy of stars including half a dozen of the most eminent singers of the day. They then vowed that they would have nothing more to do with musical New York; and the stockholders decided to try German opera under Dr. Leopold Damrosch. The leader died before the end of the season, whereupon the manager secured the services of Anton Seidl, under

whose baton New York enjoyed performances equal to any given in Europe, except in the matter of scenery. During the seven years of German opera, New York made its first acquaintance with Wagner's operas, for which the musical public had long hungered. They were immensely successful, but as the company was made up with a special view to the Wagnerian repertory, the Italian and French operas were often inadequately interpreted. Moreover, while the subscription list grew larger every year, the expenses, for some unexplained reason, increased from three thousand dollars per night, in the first season, to seven thousand, in the last; so that it is small wonder that the stockholders, who were paying the difference, met in secret conclave, and decided to restore Italian opera.

When this decision was made public, there was a chorus of dismal ululation among the lovers of German opera, myself included. Very much surprised would we have been, could we have foreseen that the change was to be for the ultimate good of all. Abbey and Grau brought over the De Reszke brothers and other eminent singers for the express purpose of helping to cast out the devil. But after they had been here a season or two, these same singers went over to the devil's side, and insisted that they would sing Wagner or nothing! The mutiny finally went so far that it even included Mme. Melba, the last hope of the Italianissimi. Here was a pretty dilemma for Mr. Grau. Antagonized by his own forces, he tried to live up to the object for which he had been engaged, and, for several winters, he made various attempts to freeze out the enemy, while apparently encouraging him. The fact is, that, personally, he had never cared for Wagner, and tried to persuade himself that his operas were not so profitable as they were supposed to be. He was even so imprudent as to allow a rival company to occupy the Metropolitan for a month of Wagner. But when that rival coolly pocketed about sixty thousand dollars clear profit, as a result of the transaction, Mr. Grau at last changed his mind, resolving to conciliate his enemies by giving

Wagner thenceforth in as fine a style as the Italian and French operas. He has every reason to congratulate himself on his conversion. Ever since he made his change of policy, the Metropolitan has prospered, and the large profits of last season came chiefly from the Wagner performances, of which there were so many that it seemed as if the old days of German opera had come back, forty-one out of a hundred and one being devoted to the Wagnerian repertory.

The new policy thus inaugurated at the Metropolitan meant something that had never been tried anywhere on such a large scale—the production of grand opera in three languages—German, French, and Italian, each work being sung in the original. It could never have been done, had not the leading singers been able, with few exceptions, to appear to advantage in all of these languages, or at least in two of them, following the example of Lilli Lehmann, who was equally admirable as Recha in *La Juive*, or as Norma, or as Isolde. It meant, however, the engagement of not one, two, or three “stars,” but of a dozen eminent singers; and this brings us to the most novel and interesting aspect of the Metropolitan opera. Many who have not studied its various phases of evolution fancy that Mr. Grau is giving “star-opera.” This he is not; for “star-opera” has always meant one great singer and a number of bad ones. Mr. Grau seldom gives “star-opera.” He finds it does not pay. He has so spoiled his public that, with the exception of *Carmen* with Mme. Calvé, an opera must be given with at least two or three singers of the first rank, to afford satisfaction. This comes high, and therefore the prices of seats are high. Experience has shown abundantly that New Yorkers would rather pay five dollars to hear three or four great singers than pay two dollars and fifty cents, or one dollar and fifty cents, to hear only one; and, once in a while, the public cheerfully pays seven dollars a seat to hear five or six “stars” at once. Such are the spots of this particular leopard, and there is no use in trying to change them. Nor should any one grieve at the

situation. There are not, even in Greater New York, enough wealthy lovers of music to make grand opera profitable or possible as a purely musical entertainment, and it is, therefore, lucky that fashion and the national desire to attend a "big thing" have combined with a love of music to make possible a kind of opera which is neither "star-opera," in the old Italian sense of the word, nor ensemble opera, as it is so often understood in Germany—an aggregate of conscientious mediocrities—but an *ensemble of stars*, an operatic galaxy.

Much nonsense has been written regarding the excessive emoluments paid to these great opera singers. One might as well inveigh against great lawyers or doctors for the exceptional fees they receive, or against Kipling for getting more for a line of verse than Milton got for the whole of "Paradise Lost." It is all a question of supply and demand. Mr. Grau does not grudge M. Jean de Reszke fifteen hundred dollars, or more, a night, because he has found that his receipts average three thousand more, when the great Polish tenor sings in a particular opera.

If he can get a ten thousand dollar audience to hear *Carmen*, when Mme. Calvé sings, and only half as much, when some other vocalist takes her place, why should he refuse to pay what seems an excessive sum for a few hours' work? Does not Paderewski constantly earn from three to five, and even up to seven, thousand dollars by playing on his piano two hours? The supply of geniuses is limited; and that is why they come high—like diamonds and gold. It is a mistake to suppose that Mr. Grau spoiled these singers, and that he inaugurated such high prices. As far back as 1807, Mme. Catalani earned, in one season, over eighty thousand dollars, and when Mme. Malibran was asked, in 1833, what her terms would be for a single appearance in London, in *La Sonnambula*, she wrote, twelve hundred and fifty dollars, though four years before that she had sung at concerts for one-tenth this sum. Mme. Patti began with four hundred dollars a month. Twenty years later (1870), she

received one thousand dollars a night, and, at present, her terms are four thousand dollars a concert in England, and five thousand in America. How much all this is a question of supply and demand, we see strikingly in the case of Signor Tamagno. He sang in New York on the same terms as M. Jean de Reszke did—perhaps he even got more—but he was not liked, and therefore not reëngaged, whereas a South American manager secured him for forty performances for the sum of one hundred and thirty thousand dollars, of which, thirty-one thousand dollars were paid in advance.

It can not be denied that there are drawbacks to the ensemble-of-stars system. It is difficult to persuade such eminent and wealthy singers to subject themselves to the drudgery of rehearsals, and without rehearsals, there can be no perfect operatic performances. But then, has any one ever heard an absolutely perfect operatic performance anywhere—even at Bayreuth, in the days when every thing was done for art, and nothing for profit? I am sure *I* never have, after five visits to Bayreuth, and seventeen years of professional experience as a musical critic. I suspect that the Viennese and Berliners would willingly put up with a somewhat less satisfactory chorus, orchestra, and scenery, if they could hear such ideal casts as New Yorkers have had in recent years: *Les Huguenots* with Melba, Nordica, Scalchi, Maurel, Plançon, Jean and Edouard de Reszke; *Lohengrin* with Nordica, Schumann-Heink, Bispham, Jean and Edouard de Reszke; *Tristan and Isolde* with the same brothers, Bispham, Brema, and Lilli Lehmann; *Rheingold* with Van Dyck, Van Rooy, Dippel, Bispham, Mühlmann, Brema, Schumann-Heink; *Don Giovanni* with Lilli Lehmann, Nordica, Sembrich, Carbone, Salignac, Maurel, and Edouard de Reszke, and so on. I may be permitted to repeat here what I wrote regarding that last cast: "It is perfect folly to speak of the decay of vocal art. To-day we have, here in New York, not only ideal casts for the *Nibelung's Ring* that would have made Wagner stand on his head (as he sometimes did) for joy, but we have singers—the same ones!—capable of wearing any one of

Mozart's tailor-made arias, and making them a perfect fit. Last night's performance of Mozart's masterwork was one calculated to forever silence the croakers who say singing is 'a lost art.' If there ever was a time when a finer performance of *Don Giovanni* could be given, it is not recorded in musical history; and—once more be it said—these same singers can also do Wagner to perfection, a task for which their great predecessors in Mozart's operas would have been utterly unfitted. Great singers, in a word, have become more versatile, more cosmopolitan. We are living in the golden age of song. Last night the evening stars—seven of them—sang together, and the audience shouted for joy."

In the days of Anton Seidl, the orchestra at the Metropolitan was as admirable as the great singers, but the chorus has seldom reached a high level. It is made up chiefly of Italians, who are not always on good terms with the pitch. I have heard them sing in such a way that one got the impression that they were split up into two dozen factions, each one asserting the claims of one of the twenty-four major and minor keys, with the adjacent territory. Of acting, they have no more notion than their predecessors in the Italian opera of the seventeenth century. As a stage manager once remarked, "They seem to think they have done all they have been paid for, if they just stand around and sing." Nor can I say much in praise of the Metropolitan scenery, though a few of the operas are well mounted. For so large a stage, the facilities for making changes are lamentably deficient.

The ballet has degenerated into a thing to be laughed at. We are far, indeed, in taste, from the times when operatic critics were expected to go into raptures over a Carlotta Grisi, "bounding like a gazelle at sunrise, when first she starts from her couch of fern, shaking the dew from her haughty crest, lithe of limb, incarnate of grace." If there ever was a graceful tip-toe dancer, I have not seen her; nature never intended human beings to whirl about on the tip of the toes, and nothing that is unnatural

can ever be "incarnate of grace." The spectacular ballet still flourishes abroad; especially in Vienna and Paris, but that is a very different thing. As a pantomime with music, it can be made very artistic and effective, with kaleidoscopic groupings and striking tableaux, and it is quite possible that in this form the ballet may return some day to American opera houses—not as an impertinent intrusion in the midst of an opera—but as an entertainment by itself, preceding or following an opera, or taking up a whole evening. In Vienna, the spectacular ballet is almost as popular as the opera itself; during the first twenty-five years of the new house, eighty-five new operas were produced, and fifty pantomimic ballets.

The repertory of the Metropolitan is often denounced for its monotony and the tabooing of novelties. Yet it is only in comparison with the opera houses of Germany that these charges can be sustained. London, Paris, Madrid, St Petersburg, have no more variety than we have, and the Italian cities have even less, being usually satisfied with one ephemeral novelty, and half a dozen old operas. Last season, Mr. Grau produced in New York twenty-seven operas, thirteen by German, five by French, and nine by Italian composers; Wagner having forty-one performances, Gounod nineteen, Verdi eleven, Meyerbeer nine, Mozart eight, Rossini six, Bizet and Donizetti three each, Flotow and Mancinelli two each, and Mascagni and Massenet one each.

If there was only one novelty in the list—*Ero e Leandro*—the management is hardly to be blamed. The public itself is at fault. In most foreign cities, the production of a new opera is looked forward to as an event of interest; and the manager can count on at least two or three paying audiences, even if the work is not a success. In Italy, indeed, the flimsiest operas are often applauded wildly, and enjoy a run of a dozen or more nights before they collapse and disappear forever. The New York public, on the contrary, seems to have an unconquerable suspicion of operatic novelties, even of those that have been accepted with acclama-

tion in various European countries; hence Mr. Grau's coy attitude toward new operas. As long as he can take in eighty thousand dollars at eight performances of Wagner, as he did last year during the Nibelung cycles in New York, he need not worry on the score of novelties; and however much the regular subscribers might like them, they will have to wait until the general public changes its attitude, or until the great singers become willing to make up a star cast for an untried opera, which they seem unwilling to do.

If we now cross the Atlantic, and view the opera at Covent Garden, London, we find a situation so similar to that of New York that a separate description becomes unnecessary. It is fortunate that the London "season" begins just a month after the New York season ends. This makes it possible to transfer the grand opera bodily from the American to the English metropolis. The London season is about a month shorter than ours. The number of performances, as in New York, hovers between about sixty and one hundred, and the number of different operas given is twenty to thirty. During the season which closed on the twenty-sixth of July last, twenty-four operas were mounted in twelve weeks, sixty-seven performances being given altogether, of which nearly one-half (thirty-two) were devoted to eight of Wagner's operas. The three most popular operas were, as in New York, *Lohengrin*, *Faust*, and *Carmen*. For the *Ring of the Nibelung* performances, which were given à la Bayreuth, in the afternoon, thirty-two thousand tickets were sold.

Of Italian operas, on the other hand, only five were given, and each of them had only one performance, although Mme. Melba appeared in most of them. Nothing could more strikingly reveal the change of taste that has come over musical London, a change accelerated, so far as the fashionable contingent is concerned, by the enthusiasm of the Princess of Wales, who is at the head of the Wagner movement in London, and who seldom misses a Bayreuth festival. In view of this change of

taste and repertory, it was only proper and wise to drop the word "Italian" from the title of the Opera, which now calls itself simply "Royal Opera, Covent Garden." There were no Italians among the leading singers, and the busiest of the leading artists were Edouard de Reszke, who made twenty-six appearances, Plançon, who sang twenty-two times, Brema twenty, Eames and Saleza eighteen, Jean de Reszke fifteen, Frau Schumann-Heink fifteen, Van Dyck fourteen, Nordica twelve, Calvé, Ternina, and Van Rooy seven, Melba four times.

In London, as in New York, the singer is of greater importance than the opera. The Germans, with their cosmopolitan taste, and love of music for its own sake, are apt to assume airs of superiority on this point, and not without reason. There is, however, another point of view. In the German provincial theatres, and too often in the capitals, the singers are not equal to the task of adequately interpreting the operas in which they appear, so that allowances have to be made which seriously interfere with the enjoyment of the music. The Germans themselves would be glad to listen to such singers as the De Reszke brothers, if they could afford to pay their terms. One of the leading German conductors, Felix Weingartner, having heard a performance of Wagner's *Meistersinger*, in London, last season, wrote an article in which he expressed his pleasure at the vocal art of Mme. Emma Eames and M. Plançon; and "how ravishingly," he continued, "did the much-praised Jean de Reszke sing the part of Walter! Not a huge voice—no gigantic tones; but, by way of compensation, what clearness of phrasing, what subtle sympathy for melody, for the structure of the musical period, and what absolute control over every resource! Not only did the 'songs' in the first and third acts have a superb effect, but every phrase, even to the smallest, was sung, really *sung*, not jerked out with *Sprechgesang*."

If I have, so far, spoken only of the interpreters of operas, not their creators; it is because America, so far, has produced no crea-

tors of grand operas, and England, no successful ones, apart from the shallow Balfe and Wallace. Meritorious works have been written by Goring Thomas, Mackenzie, Cowen, Stanford, Sullivan, and others, but most of them had to be content with a local and ephemeral success. The *Shamus O'Brien* of Stanford, which hovers between grand opera and operetta, deserved a better fate. It is not only interesting in its plot, but the local color extends to the music, which is full of original melody, and the genuine Irish spirit. The music associated with the banshee is delightfully weird, and the use made of this supernatural element gives Mr. Stanford a high rank among modern romantic composers. His opera deserves to be incorporated in every repertory in Europe and America.

Sir Arthur Sullivan's *Ivanhoe* enjoyed a considerable run in London, a few years ago; but the attempt to transplant it to Germany was not successful. The intendant of the Berlin Opera gave it a good cast together with a superb scenic outfit, and the composer personally superintended the rehearsals. But the reception of his work must have convinced him that he had better stick to his specialty—operettas. The critics found a lack of the true dramatic spirit in his opera; they pronounced the music anaemic and poor in ideas, the orchestration weak, and the form too suggestive of the old-fashioned operatic mosaic to satisfy a modern audience brought up on Wagner. Like Rubinstein, Sullivan thus paid the penalty for trying to swim against the irresistible current of operatic reform and progress. He had often expressed his contempt for Wagner; and now the Wagnerian connoisseurs turned the tables on him for trying a task beyond his special powers. As an operetta composer, on the other hand, Sullivan is esteemed in Germany. His *Mikado*, in particular, enjoyed great popularity for some years, and still had forty-five performances last year. His fate, indeed, is hardly calculated to call for tears of sympathy. His *Gondoliers* alone, which was by no means one of his greatest successes, brought in about

five hundred and seventy-five thousand dollars at four hundred performances; and if Sir Arthur has taken good care of his profits from his various operettas he must be a millionaire. Altogether, operetta flourishes in England much more than opera does, even though it is said that the Covent Garden profits for some years have been thirty-five per cent upon the capital invested.

Crossing the channel, we come to Paris, which, operatically speaking, means France; for although Rouen, Marseilles, Lyons, and the cities of the Riviera have some performances during the season, these are of no special significance. Paris is a decidedly operatic town. Not only does operetta flourish there as nowhere in the world—Lecocq's *Madame Angot*, for instance, has been sung there more than twelve hundred times, but Paris alone of all European cities has two permanent operas—the Grand and the Comique, which, like the operetta theatres, have their big prizes in the amusement lottery. The fact that the publisher of Gounod's *Faust* has made over one million dollars on the score, gives one an idea of the popularity of that opera. Another favorite is Ambroise Thomas's *Mignon*, which has yielded since 1866, an income of over twelve hundred thousand dollars to the Opéra Comique, including more than one hundred and seventy-five thousand for the composer and librettist. The receipts at the Grand Opéra for the season, average about six hundred thousand dollars, and the government gives a subvention of one hundred and sixty thousand, while the Opéra Comique gets sixty thousand dollars. The singers, moreover, have to content themselves with very much less than is asked in England and America by the leading artists. I have no recent statistics on this particular point; but in 1886, the leading singers got no more than seven thousand to nine thousand dollars a year. Nevertheless, it is said, that of the forty-nine managers the Paris Opéra has had since 1669, only five were successful financially.

The income of the Grand Opéra is limited by the size of the

house and the price of tickets. The maximum, until a few years ago, was twenty-one thousand francs, but this sum was raised to twenty-three thousand, when *Lohengrin* was produced—an opera which had been kept in quarantine by the chauvinistic mob, until it was forty-three years old, but after it had been smuggled in, was sung sixty-one times in one year, bringing over a million francs into the treasury. This opened the floodgates for the Wagner operas, which have, ever since, held a leading place in Paris, driving Meyerbeer, as everywhere else, into the background—Meyerbeer, who, for several decades, had had almost a monopoly of the opera. Possibly the change was hastened by a realization of the strange irony of fate which had made a Prussian, born in Berlin (of Jewish parents), the musical idol of France for half a century.

The chauvinistic quarantine which had so long kept Wagner's operas out of Paris had enabled the French composers to pluck his plumes and adorn themselves with them, without raising the cry of "Stop thief." The new situation, of course, did not please them, but they have been compelled to become reconciled to it, Wagner having evidently come to stay. Indeed, the greatest attraction of the Paris Exposition, musically speaking, is to be a complete cycle of Wagner's operas. The sudden death of Lamoureux, who was to preside over it, will probably not frustrate this plan, as there are "millions in it." Meanwhile, France can not complain of a lack of home talent in the operatic line. Justice has not yet been done to Saint-Saëns, at any rate. Massenet is rather shallow, and his music will not long survive him; but Bruneau and some of the other young men may yet achieve something. That the French composer has not been neglected is shown by the fact, that before the Wagner *furor* began, thirty-eight operas by Frenchmen had been mounted in twenty years as against six by Germans and Italians.

If we now cast a glance at Italy, we find nothing but decadence in every direction. The Donizetti centenary at Bergamo, in

1897, epitomized the whole situation. It was a dismal failure, chiefly, because there were no Italian singers able to give a good performance of one of his operas. Italy has long since ceased to supply the world's demand for opera singers, and the very few there are, do not remain at home, because they can get so much higher terms in England and America; yet Italian names are conspicuously few in New York and London casts, except in the minor rôles. The manufacture of new operas still continues; the *Gazzetta Musicale* gives, every year, a list of seventy or eighty new operas; but their life is not much longer than that of a newspaper, and few ever cross the Alps. Verdi is the last of the great Italians; from him to Mascagni, Leoncavallo, and Puccini, the descent is abysmal. When Mascagni first appeared on the horizon with his *Cavalleria Rusticana*, the critics almost universally hailed him as a new fixed star. My own telescope told me he was merely a comet, and my judgment has been verified; his last six or seven operas have been failures. Verdi is too old to write any more operas, Boito too lazy, and Mancinelli only a *Capellmeister* whose *Ero e Leandro* has merit, but not enough to keep it on the stage. In the absence of new operas of lasting merit, the Italian theatres have been experimenting, in recent years, with French and German works, with more or less success. But the question which used to be asked so often: "Can Italian singers stand Wagner's operas?" is now replaced by the query: "Can Wagner's operas stand Italian singers?"

It is commonly supposed that Italy is preëminently the home of the opera. This is true only in the sense that the opera has almost a monopoly of the musical life in that country. Concert music is cultivated on a much larger scale in Germany than in Italy, and even operatically, Germany is far in the lead. Italy has about twenty large opera houses and the same number of smaller ones, while Germany has twice as many. Inasmuch as the population of Germany is much the larger, the differences between the two countries can be better brought out by stating, that in the

German opera houses, the season covers ten months, while in Italian cities, it lasts only during the Carnival weeks. And while the subscribers of even the leading Italian opera house, the Milan Scala, may have to content themselves with six or eight operas, the German institutes often produce as many as fifty or more different operas during a season, including half a dozen novelties.

The keynote of musical life in Germany is cosmopolitanism. It is an actual fact, that Italian and French operas are oftener sung in Germany than in Italy and France, and to these, the Germans add their vast domestic repertory, including about fifty new operas a year. Most of these, it is true, are ephemeral. Indeed, the only brilliant successes within the last decade or so, have been won by Humperdinck, Goldmark, Kienzl, and Siegfried Wagner. Richard Wagner still overshadows everything, his operas receiving between eleven and twelve hundred performances a year. In the larger cities—as has been the case also in Paris, London, and New York—Wagner gets one-third of all the representations. In Hamburg alone, Wagner had a thousand nights in twenty-three years, beginning in 1874, on the accession of Pollini as manager. At Bayreuth the house is always sold out. The future is uncertain—not for Wagner, but for his successors. D'Albert, Weingartner, Richard Strauss, and others are industriously adding new operas to the repertory, but there is, as yet, no sign of a new genius; and, at the present date, it does not seem likely that Siegfried Wagner will astonish the world by making as long a stride from his first opera to his later ones, as his father made, half a century ago.

THE FUTURE OF THE SHORT STORY

EBENEZER CHARLTON BLACK, *Cambridge.*



THE point of view of publishers, booksellers, and the average reader would make it seem that the nineteenth century is destined to take rank as the age of the novel. It certainly stands a good chance of being remembered as the age when the novel made its way everywhere, and when an appalling number of men and women began to think that novels were the only books, and bowed their heads before the authors of them, as being the true priests and prophets of the latter days. But posterity may reasonably demand other proof for the statement that in the novel the nineteenth century has found its best and most characteristic expression—than that afforded by paragraphs of literary gossip and elaborate statistics of publishers' sales. That the people who were most discussed and talked about towards the close of the nineteenth century were novelists, and that the editors of popular magazines of that time ran a novelist as theatre managers do a star, may not be accepted as sufficient evidence that the novel was as inextricably interwoven with the worthiest life-and-thought-texture of the nineteenth century as the great epic of the soul is with the noblest years of the Renaissance in Italy, or the high drama with the outblossoming of English genius at the close of the sixteenth century. It may yet be discovered that the golden age of the novel antedates, by many long years, the time when publishers

made novel-writing a department of purely commercial activity and enterprise, and when editions of the really great novels sold best when advertised with the name of the stage heroine of the passing show. It would be salutary if men and women could be made to read for themselves what their fathers and grandfathers really did in the department of the true modern novel. Now-a-days, however, it is hard to reach the past masters of fiction, so ringed round are they with epithet-hunting stylists and pedantic editors, who talk loudly in a language very different from that of the grand and simple creators whose sole interpreters they proclaim themselves.

Those who are inclined to wail too loudly and long over the conditions that regulate the out-put of fiction to-day, especially that which seems to some the most unholy of all—the mercenary spirit in which so many novelists write and publishers advertise, ought to read attentively the history of the first few years of the modern novel. In this way those who do not dare to hope may begin to learn what value to put upon certain drifts and tendencies and be strengthened, in some degree at least, to possess their souls in patience. The history of the first twenty-five years of the modern novel—from the year 1740, when Richardson, that successful printer and man of most painful propriety, gave “Pamela” to the world, until 1765, when Sterne, that strange clergyman of the most painful impropriety, published the last two volumes of “Tristram Shandy”—is really the history of nineteenth century fiction in epitome. Within that short space of time, within twelve years, indeed, of the day when Richardson had led the way into the new literary form, blending the description of ordinary character with genuine plot-interest, novel-reading became a furor in England. It led to the invention of the circulating library, the parent of the indispensable public library, and there is peculiar significance in the fact that the modern novel and the public library have grown up together, and are, to a not inconsiderable degree, historically interdependent. In 1752 the

editors of the "Monthly Review" called public attention to their serious peril of being swamped by the new novels that surged around them, all clamoring for recognition and friendly notice. Three years later a critic of excellent fancy and, in the merry twinkle of his eye, a prophetic glimpse of a book-publisher's business methods at the close of a coming century, urged the editor of the "Connoisseur" to start what, translated into the newspaper language of to-day, would be called a syndicate for establishing on a sound financial basis a literary factory with the wholesale production of novels as the chief business of the concern. He goes into interesting details as to the economical management of the department labeled Novels, and gravely suggests that one good cutter-out could do the plot and leading adventures if he had a large enough staff of assistants to fill in such trivial details as dialogue, description, and analysis of feeling!

In another and very different respect from that which has just been indicated, the history of the first twenty-five years of the modern novel is an epitome of its subsequent history. Fielding, even more emphatically than Richardson, declared his purpose in novel-writing to be a moral one. This has been supposed by superficial readers to be but the humor of the man finding expression not unlike what is embodied in the parody of "Pamela" in the opening chapters of "Joseph Andrews." But Fielding makes every sin of his heroes tell in the most terrible way upon their after-lives, and in all his prose writings he shows himself to be thoroughly persuaded of the moral order. All we know of his character and its prevailing qualities strengthens the conviction that his *apologia* is as sincere as that of Dickens, or Thackeray, or George Eliot, all of whom have gloriously added to that special distinction of English literature, from the time of Chaucer and Langland to that of Carlyle and Ruskin—the treatment of moral ideas with energy, sympathy, and depth.

Soon as the true creators made their shining success in the eighteenth century novel, the imitators tried their hand. The literary

trick they acquired without much difficulty, but their handling of the large questions involved was on the outside only, and the air was filled with such pedantries, euphuisms, ribaldries, and infidelities as have been uttered again at the close of the nineteenth century by the jostling crowds that throng the goodly halls where so recently were heard the ripened wisdom and full-bodied expression of the last three masters of English prose fiction. When Diderot placed the pompous little London printer, by virtue of his literary achievement, along with Homer and Euripides, he was much nearer the truth in his over-estimate than those who can only raise an easy laugh at the obvious faults of his three many-volumed novels—novels that revolutionized literature in England and on the continent of Europe, making possible the work of Rousseau and the later sentimentalists. The simple, country people, servant girls, and very real men and women of Richardson's imagination quietly rung the death-knell of the kings, princes, bandits, and mighty folks of picturesque tradition. Life in narrow circumstances and lonely villages began to interest men of true genius, and creative insight into the springs of character; and within twenty-two years of the appearance of "Pamela," although not published for four years later, was written the first great prose idyl of lowly life, "The Vicar of Wakefield."

Goldsmith's one story appeared when the novel, as created by Richardson and Fielding, was being coarsened and brutalized; and this bit of literary history has been virtually repeated at the close of the nineteenth century. Side by side with the sex novels, the problem novels of all kinds, the religious novels, the political novels, the philosophical novels, that have flooded public and private libraries these last years, have appeared the short stories that deal with the joys and sorrows of humble lives. In these short stories the fiction of the closing years of the nineteenth century has found its most vital and distinguished expression; and the writers of them, dealing with the passions and prejudices, the

haunts and habits of obscure villagers and rustics, miners, artisans and tradesfolk, soldiers and sailors, in Scotland, in New England, in France, in the Tennessee mountains, in California, in India, in Iceland, in Russia, have in their best work triumphantly solved the hard problems connected with realism in art. The reason why that best work has humble life almost invariably as its theme is not far to seek. The short story demands as much fidelity to the fact and as excellent a spirit in the treatment as a ballad or a lyric. A falsetto note is fatal. And it is in humble life, where the actors are kept close to reality by force of circumstance, that the necessary conditions are most satisfactorily fulfilled. Society life as a rule tends to breed fictitious character and fictitious passion; and it is significant that in the short stories which have tried to give expression to the delicate situations and almost impalpable shades of feeling so common in fashionable and artificial society, we begin to have that preciousness of style and over-elaboration which make certain short stories a laughing-stock to the reader who knows that the really great in literature is never *bizarre* and the true in expression something far removed from stylistic somersaults and affectations of impressionism. There is nothing of this in the supreme short story of English literature—Wandering Willie's Tale in "Redgauntlet"; there is nothing of this in Turgénieff's sketches of local types and manifestations of character in rural Russia, or in Hawthorne's romances of real life in a country in which, as he was fond of saying, there was no shadow, no antiquity, no mystery, no picturesque and overshadowing wrong, nor anything but a very commonplace prosperity in broad and simple daylight. In such stories as these, as in all the short stories which have survived the generation that first read them, there is clear recognition of the fact that the light of every soul burns upwards; there are everywhere glimpses of the hidden nobilities that are the heritage of every human being, no matter how narrow and sordid the physical environment may be. This is a truth that the elabora-

tors of the later French *conte* never have been able to grasp; and no amount of "close atmosphere," no delving after freaks and freakish sentiments to be tricked out in freakish phrases, no extraordinary forms of speech or deviations from the honest, which is after all is said and done the only artistic way of telling a thing, will make these later *contes* live. Their literary art is simply one of vulgar, open-mouthed curiosity.

Some writers of modern short stories who feel the influence of the great democratic and socialistic movements of these days and realize that it is the joys and sorrows of common lives that will more and more attract the writer of fiction, but who can not break with the traditions of the past, least of all with the oldest and newest of these traditions—that wealth and happiness go hand in hand—have given what are called realistic pictures of very humble life. The reader can smell the insanitary condition of the tenement-house; his ears may be excoriated by the shrill oaths of the women and the brutal obscenity of the men. But the writers of these tales of mean streets and dreary villages deal with only one side of lowly life and that a far from characteristic one. Neither in the slums of great cities, nor on isolated farms, does the melancholy of existence arise from the squalor of the surroundings and the seemingly trivial and contemptible lives of the men and women. Gloom and leaden-eyed despair are a property of all streets and all places in town and country; they are a property of life itself—of all life that has lost its outlook upon the great infinite horizons. Misery is something quite other than the natural result of being poor. The stars of heaven look down upon no truer happiness than that within the four bare walls of many a cottage and cheap city lodging. Flaubert saw in country villages nothing but open drains, overflowing dustbins, malodorous mudheaps, the very shade trees and little flower patches reeking and offending; Wordsworth found love in huts where poor men lie, and amid the silence of lonely hills a peace that passeth understanding.

It would be hard to imagine anything more depressing than a short story written by one without a wholesome sense of humor. Every short story that the world has taken to its heart, whether the scene be Russia, India, France, California, or Scotland, keeps the perfect poise of great literature by having humor in its make-up. No amount of mere fidelity to fact, not even the presence of that rarest of all literary qualities—*tendresse*, will avail to make a short story literature when humor is away. True humor may speak in jest, but it always thinks and feels in earnest. It keeps a writer true to humanity's deeper instincts and finer capacities. No man with true humor could attempt to depict life as it is, and put upon his canvas only the failures and the follies of men and women. He knows that the upward struggles and the moral victories are quite as real as obscenities, profanities, and the strange sins.

It is significant that the bias of the best writers of short stories, the writers who hold the keys of laughter as well as those of tears, is always towards the novel. Action interests the true humorist as deeply as do description and analysis. The ethical energy of every noble, creative soul demands an outlet in the high epic, the great drama, or the great novel. The masters of the past, the poets, the dramatists, the novelists, knew the darkest and worst side of human existence; they gauged its abysses; they described it in language more relentless, more unflinching, than that of any of the so-called realists of to-day. But the reader rises fortified and sublimed from the perusal of the world's creative works, the writers of which, however much they might laugh at poor humanity's follies and absurdities, had a heart of quivering pity all the while and eyes wide open to the worth and ability along every highway side.

With few exceptions, the world's great novelists have been masters of the short story. They hammered at the short story until they perfected it as a literary form, as distinct and self-contained as a sonnet or a ballad. They found that the ideal

short story, like the ideal lyric, can deal with only one main emotion or experience—that the slightest irrelevancy is fatal—that every detail must be bound with living cords to the heart—that every word must bear on the main idea. But man is a complex kind of creature; every man, be he but a street scavenger, is a whole bundle of men, and every one of them of varying moods. Where is the chance to paint a man in a short story? At best there can be but a glimpse of one passing experience, one isolated emotion. Imagine “Tom Jones” in a single chapter, or “Le Père Goriot” in a *conte*! There have been of late a few strenuous and interesting attempts at a cross between the novel and the short story. The resulting hybrid has been sufficiently alarming to prevent, it is to be hoped, further experiments in this direction. It is worth noting, however, that the hysterical and emotional novelette is less painful to encounter than the amorphous and hydrocephalic short story. In the matter of literary forms, the mixture of bloods and crossing of strains seem less successful than biologists declare them to be in the animal world.

The history of the modern novel and clear recognition of the special literary qualities which must always inform the short story, indicate clearly enough the future of these great departments of modern fiction. The place of each as a work of art is distinct and assured. There can be no conflict between them; their spheres can not even intersect. As they have done in the past, so in the future they will act and re-act upon each other, and always in the end to the advantage of both. There are those who bewail the present prevalence of the short story all over the world, and read in this a dreary sign of the times and a bad omen for the future of fiction. They feel that as the telegraph, telephone, and modern business methods tend to make letter-writing a lost art, as the vaudeville is supplanting the legitimate drama, and short and pithy paragraphs in the newspapers are crowding out learned and philosophical leading articles, scrappy

short stories are destined to have all to themselves the realms where of old reigned Cervantes, Richardson, Fielding, Balzac, and Walter Scott. But the world may get on very well without the letters of famous men. The fame of the author of "Sartor Resartus" would not have been less bright to-day had he left as few personal memoranda as Shakespeare did. Vaudeville, too, may not tend to debauch a theatre-goer as much as a problem-play or a sex-drama does; and in the best short stories of the present day may be found nobler fulfilment and more hopeful promise for the future of fiction than in the ablest novels that have appeared since the masters became silent.

The attention to detail, the obliteration of the unessential, the concentration in the expression, which the form of the short story demands, tend to a beneficent influence on the style of fiction. No one doubts that many of the great novelists of the past are somewhat tedious and prolix. The style of Richardson, Scott, Dumas, Balzac, and Dickens, when they are not at their strongest and highest, is often slipshod and slovenly; and such carelessly-worded passages as are everywhere in their works will scarcely be found in the great novels of the future. The writers of short stories have made clear that the highest literary art knows neither synonyms, episodes, nor parentheses. They have shown that this art is founded on that truth which has humor and tenderness as its essential qualities and which disdains any building whose architecture is not to its taste and the arrangements of which are ill-adapted to its comfort. Least of all has this truth to do with the affectations and pedantries of phrasemongers and epithet-hunters.

"When love begins to sicken and decay,
It useth an enforced ceremony.
There are no tricks in plain and simple faith."

De Quincey was fond of saying that Shakespeare extended the domains of human consciousness, and pushed its dark frontiers into regions unsuspected before his time. This is literally what the

writers of short stories are doing. Like the Jesuit missionaries of old, they are going everywhere and opening up unknown regions in the best of all ways—by awakening sympathetic interest in the loves, joys, and sorrows of the simple, common people, who are after all doing the most of this old world's hardest work. With clear vision and deft pen these writers are revealing the identity of human nature—that in its essentials it is the same amid the ice-floes of Baffin's Bay as beneath South Sea palms, and that the difference between life in a far western mining camp and that in the Iceland fishing village is one of dress and trappings only. The short story writer is the true explorer and conqueror of the modern world, and his work is only begun. That work has been sharply criticized, and he has been told that he is only pampering a taste for exotic literature. But he is doing much more than that. The worthiest of these writers of short stories are awakening men and women to the goodness as well as to the strangeness and fascination of their kind. They are taking down the old barriers of ignorance and aloofness and bringing man nearer man. They are vindicating the ideal element in fiction, for they are painting life as it is, and painting it from a point of ethical and ideal insight. The worthiest of these writers of penetrative imagination and supreme literary skill, whether they deal with the tragedy of life in a Cornish hamlet, or with the humors of a far off Bengali village, never slander their brothers and sisters. They are showing that human nature is, after all, a noble thing; that lowly folk, bowed with labor and environed by stern enough conditions of time and place may be, like the king's daughter, all glorious within. The peculiar note of the short story at its best is the importance of the individual soul, be the surroundings of the humblest, or the most sordid. It is the heroism, the fidelity, the humor, the pathos, the inherent worth and beauty of life in the narrowest circumstances, that are the themes of the great writers of the short story. Unconsciously they have made it a more powerful antidote to the most dangerous tendencies in the life of

the present day, than any of the elaborate schemes of social reform can possibly be. To the many who chafe under the wholesome restraints of law and order and domestic duty, who cry out if their personal comfort is interrupted in the very slightest, and who crave restlessly for new pleasures, the writers of the short story preach a practical and beautifully embodied gospel of patience, quietness and simplicity of life and thought. They preach this in the best of all ways by not knowing that they do so. And they speak to everybody. They reach the masses as well as the select few by the perfection of their literary art and the excellence of their prose style—a style that has many of the elements that are found in great poetry, particularly a certain power of crystallizing thought into firm lines and a sharp point, so that it stands out clear, distinct, and penetrating. Such a style speaks to every man in his own tongue, and in a way that he can not forget even should he try.

As the strange years go on and humanity begins to realize that money-lust and power-lust, either in nations or in individuals, are more serious anachronisms than slavery or belief in the Ptolemaic system of astronomy, and that the complex social life of those who come under the influence of the so-called higher civilization of these days, is the most formidable foe that culture and refinement have, the short story will gain firmer and firmer hold upon the affection and imagination of the world. At its best it has always stood for what is real, for what is noble, for what is uplifting. When it has fallen even the slightest degree below the high level of its perfection, it has quickly degenerated into grossness, caricature, or pedantry. It has floundered through these quagmires and desert sands in the past; it is hard to believe that it can ever so lose its way in the future. Through the influence of the short story the novel may again take rank as an expression of the best thought of the passing time; and the twentieth century may accomplish what the latter half of the nineteenth panted

after in vain—a great contemporary novel. The writer of it will have had strange trials and been at school with grim experiences, which he will not turn into magazine copy or send to the gossip column of a literary review. He will conserve his moral and intellectual energies for his high function of setting down in just, Shakespearian proportion, the truth as he has seen it with swift vision and as it has been revealed to his large heart. He will have learned from the short story that the true field of the artist is simply that of the moralist, for it is the field of common life—the field full of folk, as old Langland saw it in his dream away back in the fourteenth century. He will have learned from the short story that the family hearth is a very sacred place, and that, in the material world, there is nothing so tremendously binding and unalterable as that principle of which every great work of creative genius from the grey dawn of time to these latter days is a far-shining illustration—*the laws of morality are the laws of art.*



RECENT WORK IN THE SCIENCE OF RELIGION

C. H. TOY, *Harvard University.*



HALL the discipline which deals with the religious history of the world be called "science of religion," or "history of religion," or will it be better to adopt the seemingly less pretentious title "history of religions"? The question has been warmly discussed of late (1), and, while not of fundamental importance, doubtless deserves consideration. The difference of conception involved in the three names mentioned above is obvious; the third contemplates, in the first instance, a description of the various organized forms of religious belief in the world; the second would describe religious phenomena considered as a single mass; the first undertakes an orderly arrangement of the phenomena, tracing their origin in the mind of man and their development according to certain principles. In the actual practice of scholars, the three methods have proved to be substantially identical, each with the others. History, in its wider sense, deals with beginnings and causes, and with principles and laws of growth; the description of any particular religion is generally understood to involve an inquiry into its earliest forms (which

(1) See F. Max Müller, *Chips*, I, and *Theosophy*; De la Saussaye, *Lehrbuch d. Religionsgeschichte*; E. Caird, *Evolution of Rel.*, I; Ths. Achelis, in *Archiv. f. Religionswissenschaft*, I.; C. P. Tiele, *Elements of the Sci. of Rel.*, I.

go back to the earliest known forms of human thought), and to the psychological bases of these forms. On the other hand, a science of religion must rest on an examination of all its phenomena, which must be individually studied before they can be arranged into a system. The "science" may be held to differ from the "history" in the stress it lays on psychological investigation; but obviously it should not trench on the domain of the science of psychology—it should confine itself to using the results of the latter. Those who hold that we are still in the initial stage of the inquiry, and that it is not possible at present to do more than collect facts, will prefer the name "history." A "science" may, however, be genuine, though in its infancy, and we may speak of a "science of religion" as properly as of a "science of electricity" or a "science of language"; a large number of religious phenomena have been collected, verified, arranged in order of historical appearance, and referred to human impulses, instincts, and ideas; many things remain unexplained, and new phenomena are constantly coming to light, but this is true of all sciences.

The Science of Religion, first formally introduced to the world in 1867 by Professor Max Müller, has gained recognition slowly but surely. Up to two years ago, there was only one periodical publication devoted to the subject, the Paris *Revue de l'histoire des Religions*. Last year, the German Quarterly, *Archiv für Religionswissenschaft* (1), made its appearance, and has already produced a mass of interesting and important matter. Its field, as is stated by the editor in the first number, is the whole domain of religious science, including descriptions of religious beliefs and modern popular customs (folklore), and psychological investigations (there is, for example, an essay on "the psychology of

(1) Edited by Professor Achelis, of Bremen, in conjunction with a number of eminent scholars, and published by J. C. B. Mohr (Paul Siebeck), Freiburg i. B., Leipzig, and Tübingen.

superstition"). The Paris *Revue* (now edited by J. Réville and Marillier) has so far had no psychological papers. Our space does not permit a notice of the particular articles in the two reviews; they contain a vast deal of matter covering the whole field, and are indispensable to students of the subject (1).

The last few years have been fertile in works which come under the head of "introductions," that is, they are discussions of the elements out of which religions are formed. Of these, none is more interesting than that of Dr. Jevons (2), the clear and attractive arrangement of which and its felicitous style make it persuasive and impressive. In a well articulated series of chapters, he discusses early man's idea of the supernatural, the cult of ghosts, the nature of taboo and its relation to morality, the origin of totemism, the cult of ancestors, polytheism, the future life, and monotheism. Among the many things which he elucidates with learning and skill, we may note especially the Eleusinian mysteries, of which he says that they taught that communion with a deity (the condition of future bliss) was open to all their members, men or women, bond or free—they, in effect, established a church. He adopts the view of Robertson Smith, that ancient sacrifice was essentially a meal, in which god and worshiper in fellowship partook of the flesh of a sacred (ultimately divine) animal, and thus strengthened the tie of kinship—

(1) Occasional articles of value appear also in other magazines, such as the *Contemporary Review*, the *Fortnightly Review*, the *Nineteenth Century*, the *Revue Biblique*, the *Annales du Musée Guimet*, the *Theol. Tijdschrift*, the *American Journal of Archaeology*, the *New World*, the *American Journal of Theology*, the *Journal of the Royal Asiatic Society*, the *Journal Asiatique*, the *Zeitschrift der deutschen morgenländischen Gesellschaft*, the *Zeitschrift für Assyriologie*, the *Proceedings and Transactions of the American Oriental Society*, and others; a few papers are found in the *Proceedings of the Eleventh International Congress of Orientalists*, Paris, 1897.

(2) F. B. Jevons, *An Introduction to the history of religion*, London, 1896. The work is reviewed by Marillier in the *Rev. de l'hist. d. Rel.*

a theory which, while it satisfactorily explains certain details of clan religion, should not be so held as to exclude other forms of sacrifice. The views which may be called especially characteristic in Dr. Jevons' book are these: that taboo is the basis of morality; that the domestication of animals and plants (and thus all civilization) is due to totemism; and that monotheism is not an outgrowth from polytheism. While recognizing the ability of his exposition and the truth of much that he says, I can not but dissent from these positions. It seems to me more in accord with known facts to hold that taboo, primarily a religious conception, came to be a formulation, or petrification, of a part of moral custom, and was constantly opposed by growing enlightenment; that the origin of totemism is unknown, and that domestication of animals and plants was the result of man's attempt to control and utilize his surroundings; and that the transition from polytheism to monotheism, a normal process in all advanced societies, has been brought to a successful issue only where certain favorable conditions of endowment and circumstance existed. But, though one may demur to these positions of Dr. Jevons, no reader can fail to recognize the value of the contribution he has made to the history of early religion.

Two years ago, appeared the second edition of Saussaye's useful "Manual of the history of religion" (1), with changes which make it a new work. The whole of the phenomenological and ethnographical introductory part has been omitted, doubtless to make room for other things; this part is, however, so important (furnishing the key to the descriptions in the rest of the book) that the student should have the first edition at his side in reading the second. The new edition is a collection of monographs by various authors, Professor de la Saussaye himself contributing little. The advantage of the treatment of each religion by a

(1) P. D. Chantepie de la Saussaye, *Lehrbuch d. Religionsgeschichte*, Freiburg i. B., 1897.

specialist is obvious, though the work, as recent critics have pointed out, thereby, in some measure, loses its unity—we have only a number of independent volumes bound together. Nevertheless, the descriptions of the various religions follow the same general lines, and to this extent, there is real unity in the book. The greater part of the space has naturally been devoted to the great Semitic and Aryan religions; but it is to be regretted that place was not found for a fuller treatment of the lower and the outlying cults, Australian, Negro, North American Indian, Mexican, Peruvian, Mongolian, Chinese, and Japanese, since in some of these are found the most developed forms of ideas which are important for the understanding of higher systems. The book is thus not at all a history of religion, but a history of certain religions. And in this edition, as in the first, one very noteworthy religion—the Christian—is wholly omitted. I may repeat here what I said (in the *New World* for June, 1892) of the first edition, that this omission is undesirable. There is no good reason why descriptions of Israelitism and Christianity should not be included in a work which undertakes to set forth the historical forms which religion has assumed throughout the world. In the first edition both these religions were excluded; in the new edition the former is recognized, but its history is brought down only to the beginning of our era. Now, as Buddhism, Hindooism, and Mazdeism are brought down to the present time, Judaism also, in its rabbinical and modern developments, should receive notice. And for Christianity, there is need of such treatment as is given the other great religions. In our Church-histories, the real development of Christianity is obscured by a multitude of unimportant details, and the failure to bring out clearly the principles of growth. No religious sensibility need be offended by a purely scientific presentation of the historical fortunes of Christianity.

The beginning of theism, Mr. Allen (like Mr. Herbert Spencer) finds in the worship of the dead (1). This cult has, in fact,

(1) Grant Allen, *The Evolution of the Idea of God*, London, 1897.

been, and is, widespread and influential, but it explains only a part of the idea of God—it does not account for beast gods, or for the worship of trees and stones. Mr. Allen, however, brings out his point forcibly, and gives a good sketch of the development of ritual considered as custom.

Among the most important contributions to our subject must be classed the Hibbert Lectures and the Gifford Lectures. The former ceased five years ago, after having produced a series of instructive works, mostly on national religions (1); the latter are still going on. Limitation of space makes it impossible to notice the earlier Gifford courses; I must confine myself to the most recent. Professor Tiele (2) deals with the fundamental forms and ideas which belong to all manifestations of religion. The first half of his course, the “morphological” part, begins by pointing out that there has been a real development of religion, in the sense that its conceptions become clearer and more rational, and its manifestations more refined and more moral. This remark, I may observe, is true of any body of religious thought and conduct in an individual or a community, but only because religion proper, the sentiment of union with God, has no conceptions of its own, but draws its framework from science and ethics. The particular conception of God current in any community is a product of reflection; the current morality springs from social custom and thought; the devotional usages are shaped by the manners and general social ideas of the people. It will greatly help our comprehension of religious history to note that all improvements in religious ideas are due to the general advance of civilization; all civilized communities have reached about the same conceptions of God and of morality.

(1) The Hibbert Trustees published also half a dozen other works on religious and ethical subjects.

(2) C. P. Tiele, *Elements of the Science of Religion*, Edinburgh: Vol. I, 1897; Vol. II, 1899.

To return to Professor Tiele—he next discusses the stages, the directions, the laws, and the essentials of religious development; he classifies religions, as in his article “Religions” in the “Encyclopaedia Britannica,” and suggests the ideas which are especially prominent in the Aryan and Semitic groups, and in the particular religions; the laws of growth he makes such things as unity of mind, contact of different groups, and continuity of life, and the essential of development he holds to be the movement from unorganized multiplicity to differentiated and organized unity. The second half of the course, the “ontological” part, treats of the constituents of religion, the genesis of faith, the conception of God, devotional forms, the church, and the essence, origin, and function of religion. The essence is taken to be adoration, the origin, the infinite within us (at first only dimly perceived), the function, the harmonizing of the powers of the soul and the production of peace. The lectures exhibit Professor Tiele’s well-known learning and skill in exposition, and are full of suggestion and interest. A different line of inquiry is followed by Mr. Lang in the work in which he seeks to trace the origins of the monotheistic belief (1). He admits that polytheism is to be referred to crude, animistic conceptions, but contends that, quite apart from these, the idea of a self-existent, eternal, moral creator is to be found in savage tribes, under conditions which force us to regard it as a direct revelation of God in the mind of man; and he thinks that his position is supported or confirmed by telepathic and telopic phenomena, which present themselves frequently in savage and in civilized life (as in “mediums” of various sorts). His theory has been widely opposed, on the grounds that his alleged facts are dubious, and that a very large mass of testimony goes to show that the savage’s creator is very different from the being described by Mr. Lang. On the other hand, his view is

(1) Andrew Lang, *The Making of Religion*, London, 1898; reviewed in *Fortnightly Rev.*, Nov. 1898, and *Folklore*, Dec. 1898.

received with a certain degree of favor by those who attach importance to mediumistic phenomena.

The works mentioned above deal almost entirely with the external side of religion. They all go to savage life for the initial stages of even the highest faiths, and they all accept the doctrine of evolution as the principle of growth, though some (like Dr. Jevons) hold that evolution does not always mean progress. In the question of the psychological starting-point of religion, there is, at present, no consensus among students. It would take too long to state the various views that are held; but it may be observed, on the one hand, that these views, often apparently mutually exclusive, are not necessarily so, and, on the other hand, that it is probably an error to set up any one thing as the sole starting-point of the religious life—we should rather recognize various sides or manifestations of a psychological complex. The question can not be discussed here. It will be sufficient to note, that of late, several writers have laid stress on the presence of the infinite in the soul of man as the true origin of religion. This was done some years ago by Professor Max Müller, to whose expression, “the perception of the infinite,” exception was widely taken on the ground that “such perception is inconceivable in early man,” and Professor Tiele accordingly, as is remarked above, prefers to speak of “the Infinite in man.” A similar position is taken by Dr. Woods (1), who holds that the essence of the religious ideas is that men live in the belief in the reality of superhuman power, whence comes an experience of an unfathomable, half-revealed mystery which “plays between the tones of dread and confidence,” and that “just as in interrelation with the world of the perceptive organism, the picture of the world of the senses arises by an involuntary activity of the soul, so in the same way, in interrelation with the same non-ego, the experience of God as the inner

(1) James Haughton Woods, *The Value of Religious Facts*, N. Y., 1899.

nature or as the meaning of this world arises also by an involuntary activity." In these definitions, we see a justifiable reaction against such crude theories as that religion is simply the product of fear or an invention of priests. Dr. Woods further considers the values and the standard of religion, pointing out that religion is to be studied by contrasting its activities with other functions of life (aesthetic, ethical, etc.), and that any particular form of religion is to be judged by its accordance with the norm which each thinker fixes for himself. An examination of the essential problems of the Philosophy of Religion is made by Professor Royce in his Gifford Lectures, of which only the first half has appeared (1); a notice of his discussion is reserved till the publication of the Second Series, in which he will apply the fundamental principles of being to problems that directly concern religion.

While these general investigations have been going on, there have been numerous contributions to the history of particular religions. In this connection, I may mention the establishment (in 1892) of the "American Lectures on the history of religions," the scope of which is similar to that of the Hibbert Lectures; four series have so far been delivered, by Rhys-Davids, Brinton, Cheyne, and Budde (these are described below). The more important works from all quarters may be mentioned according to religious groups.

For some decades past, special attention has been paid by scholars to the religious ideas and usages of the least developed peoples. These were formerly neglected as curiosities of barbarism, but are now, in accordance with the modern conception of scientific research, prized as exhibiting the germinal forms of religion. A general view of the phenomena of early cults is given by Dr. Brinton (2), whose acquaintance with American religions

(1) Josiah Royce, *The World and the Individual*: First Series, N. Y., 1900.

(2) D. G. Brinton, *Religions of Primitive Peoples*, N. Y., 1897.

peculiarly fitted him for this task. He has done good service in calling attention to the religiousness of the savage, to his great nervous susceptibility, to the merry (often orgiastic) character of his religious ceremonies, to the existence of individual totems, and to the curious rites connected in savage life with marriage and birth. He places the origin of religion in the universal assumption that "conscious volition is the ultimate source of all force," and so regards all religions as the product of a common humanity. He assigns a great rôle in the production of early religious thought to unconscious cerebration. In the desire to make his picture as complete as possible, he has found himself led to put side by side the customs of communities (Australian and Mexican, for example,) widely separated in culture; and he had no opportunity to describe the evolution of customs (1). Equally important with the customs of savages are their aetiological myths and traditions, and valuable contributions to this side of religious history are made in recent volumes of the "Memoirs of the American Folk-lore Society," which give the creation stories of the Navahos and the Thompson River Indians (2). It appears from these stories, that the conceptions of the tribes in question, respecting the origin of things, are extremely crude. They know nothing of an all-powerful, eternal, moral creator; the original fashioners of the world and of human communities are beasts, whose procedures are childishly haphazard, grotesque, and selfish; like other early creators, they do not produce, but only shape existing material, the origin of which there is no attempt to describe. The bearing of these facts on theories of the development of creational conceptions is obvious. Another set of curious creation stories has recently been brought to our knowledge in definite shape. Australia has hitherto been, so far as regards its religious culture, almost an unknown

(1) Dr. Brinton died in 1899. His services, as a student of religions, were great, and his loss will be deeply felt.

(2) Washington Matthews, *Navaho Legends*, Boston, 1897; James Tait, *Traditions of the Thompson River Indians*, Boston, 1898.

country ; a couple of determined explorers, by living fourteen years with certain tribes, have laid bare some of its secrets (1). These tribes refer the beginnings of things to beings vaguely called "ancestors"—a sort of supernatural men, who come from no one knows where, and are as non-moral, and almost as haphazard as the beast creators of the Redmen. It is noteworthy that in both sets of stories, prominence is given to the origin of social institutions ; it would seem that, along with the heavenly bodies and certain important spots of earth, what most interested the early man was the history of his tribe and its customs. Definite gods do not appear in the Australian stories. Messrs. Spencer and Gillen give also full details of initiation rites, from which some light is thrown on the origin of circumcision (2). They have been led also to a view of the nature of totemism different from that which has hitherto prevailed. The common opinion has been that the totem, when an animal or vegetable, was originally never eaten (on this alleged fact the theory of the totemistic origin of the domestication of plants and animals has been founded). Messrs. Spencer and Gillen find that among the early Australians the totem was freely eaten, that, in fact, it was the special privilege or duty of a clan to eat its totem. This apparently revolutionary discovery is discussed (in the *Fortnightly Review* for April and May, 1899) by Mr. J. G. Frazer (himself an authority on the subject), who accepts the new facts and frames a new theory. It will be prudent to wait for further information before undertaking a full explanation of the curious phenomena in question.

Recent works on the great religions are characterized by the

(1) B. Spencer and F. J. Gillen, *The Native Tribes of Central Australia*, London, 1899.

(2) Similar details are given by W. E. Roth, *Ethnological Studies Among the N. W. Central Queensland Aborigines*, London, 1897. For India, see W. Croke, *The Tribes and Castes of the North-western Provinces and Oudh*, Calcutta, 1898.

effort to embody the results of the latest discoveries, and to arrange the material, as far as possible, according to the principle of development. Some series of histories have been begun, among which may be mentioned "Handbooks on the history of religions," edited by Professor M. Jastrow, Jr., of which two volumes have appeared, by Hopkins and Jastrow (see below). Of the Semitic civilization, the oldest known to us is the Babylonian, which is already well developed when we first meet it in historical records. The large mass of Babylonian and Assyrian religious material has been carefully worked up and clearly presented by Professor Jastrow (1), who describes in detail the deities, myths and legends, epic poetry, magical formulas, prayers and hymns, and the temples and cult. Unfortunately, there are almost no records of popular religious customs, but Professor Jastrow has subjected the old poems to a searching analysis, and extracted from them not a little material bearing on early ideas; there is enough to show that crude, savage conceptions lay at the bottom of this old faith, which later advances to the very verge of ethical monotheism. It appears also that there is the usual Semitic vagueness in the persons of the gods; no one of them differs much from the others. The Israelitish religion also, is known to us only in a relatively mature form; its history is sketched by Professors Budde and Cheyne (2) from the entrance of the Israelites into Canaan to the second century B. C. In the earlier period, the principal problem is the origin of the Israelite cult of Yahweh; Professor Budde, in agreement with many recent scholars, derives it from the Midianites, with whom, he holds, Israel entered into alliance, the natural condition of which was the adoption of their religion. He sees evidence in the Old Testament, that it required several centuries to establish

(1) M. Jastrow, *The Religion of Babylonia and Assyria*, Boston, 1898.

(2) K. Budde, *The Religion of Israel to the Exile*, N. Y., 1899; T. K. Cheyne, *Jewish Religious Life After the Exile*, N. Y., 1898.

Yahwism firmly in Israel (for example, Elijah's visit to Horeb, and the fact that we do not find proper names compounded with *Yah* till Saul's time). In the postexilic period, historical details are almost entirely lacking till the latter part of the fourth century B. C.; Professor Cheyne seeks to restore the history of the time from the literature (especially Isaiah, Job, Proverbs, Psalms), with the general result that this period, which used to be regarded as a blank, is found to be full of intellectual and spiritual life. An excellent sketch of the whole of the Israelitish religious history down to the beginning of our era is given in Professor Smend's "Manual," which has just reached a second edition (1). Kayser's sketch of the theology of the Old Testament has been reëdited and modified by Marti under the title *Geschichte d. israel. Religion* (Strassburg, 1897). Professor Charles gives an elaborate and suggestive history of the Jewish and early Christian ideas of the "last things" (2); he is especially at home in the Apocryphal and Apocalyptic writings, to the examination of which he devotes a large part of his book. On Israelitish ancestor-worship, to which Professor Charles assigns a prominent place in the early time, compare also Frey's *Tod, Seelenglaube und Seelenkult im alten Israel* (1898). Contributions to the history of Biblical religion are found in two new dictionaries, the "Dictionary of the Bible," edited by Hastings, and the "Encyclopaedia Biblica," edited by Cheyne. The more intimate relations of our time with Mohammedan lands excites a growing interest in the Islamic religion. Its roots are to be sought in the old Arabian faith as well as in the life of Mohammed; in these two periods, Wellhausen is a prime authority, and his results are given in his book on the remains of Arabian heathenism, a second (somewhat enlarged) edition of which has appeared (3). The effect on Islam of its

(1) A. Smend, *Lehrbuch d. alttest. Religionsgeschichte*, Freiburg i. B., 1899.

(2) R. H. Charles, *A Critical History of the Doctrine of a Future Life in Israel, in Judaism, and in Christianity*, London, 1899.

(3) J. Wellhausen, *Reste arabischen Heidenthums*, Berlin, 1897.

adoption by an Aryan people is discussed by Baron Carra de Vaux (1), who instances Mahdism, Ismaelism, the Druses, Sufism, and Babism as forms of thought alien to the Koran and to Islam. The relation of race to religion is a question which demands a fuller treatment than has yet been given it. A comparison between the Koranic dogma and that of the Jewish and Christian Scriptures is made by Professor Smith (2), who points out (as Wellhausen had already done) that Mohammed drew more of his material from Christianity than from Judaism. Pautz's examination of Mohammed's conception of revelation (3) (in which he carefully collects the Koran passages bearing on the question) has led him to investigate some of the main conceptions of the Koran, theistic, eschatological, ethical, etc. The possibility of the conversion of Mohammedan populations to Christianity has been a good deal discussed of late. On this point Professor T. W. Arnold's history of the propagation of the Moslem faith (which, he thinks, has been effected mainly not by the sword) is of value, and a suggestive statement from the Algerian French point of view is made by the Comte de Castries (4), who declares that the French policy in this regard has been a failure, the Algerian Moslems having successfully resisted all attempts made to reach them by missionaries of the Church of Rome. General histories of Semitic religions are given in Saussaye's *Lehrbuch*: Babylonian and Assyrian, Syrian and Phœnician, by F. Jeremias; Israelite, by J. J. P. Valetton, Jr.; Mohammedan, by M. T. Houtsma.

The old disputes over the Egyptian religion, as to whether it was monotheistic or henotheistic or polytheistic or animistic, etc.,

(1) C. de Vaux, *Le Mahométisme*, Paris, 1898.

(2) H. P. Smith, *The Bible and Islam*, N. Y., 1897.

(3) O. Pautz, *Mohammed's Lehre v. d. Offenbarung*, Leipzig, 1898.

(4) H. de Castries, *L'Islam*, Paris, 1896.

have now happily ceased ; it is now seen that it was all of these in its different stages of development. Maspero, Pietschmann, Petrie (1), and others have adopted the historical method of investigation, and have recognized the fact, that the growth of this splendid cult was in principle not unlike that of the other great religions of the world. It is significant that Lange's sketch (in Saussaye) gives more space to popular usages than to details of the figures of gods (2). A distinction is properly made between the religion of the people and the systems of the theologians, and the supposition that these last had an esoteric teaching is rejected. Much remains to be done in the discovery and elucidation of folk-beliefs, myths, the doctrines of the future life, the relation between the Egyptian and Semitic cults, but the proper method seems now to have been adopted, and there will doubtless be steady progress.

It is only recently that works on the Hindoo Aryan religion have attempted to investigate the traces of primitive beliefs in this religion. These traces are relatively not numerous, because there is no historical record of ancient India, and the religious literature belongs to a period of comparatively high cultivation which had outgrown the earlier ideas. Hardy, in his brief sketch of Indic religion (3), collects some of the old customs, such as ancestor-worship, and endeavors to follow the growth of the religious thought in an orderly manner. It is desirable that this side of the investigation should be pushed further. Hardy includes Buddhism and Jainism in his sketch. Buddhism is described

(1) W. M. F. Petrie, *Religion and Conscience in Ancient Egypt*, London, 1898. See also A. Wiedemann, *Relig. of the Anc. Egyptians* [Eng. transl.] London, 1897.

(2) The progress made in this regard may be seen by reference to Rawlinson's *Egypt*, a work from which one gets next to no conception of the real religion of the land.

(3) E. Hardy, *Indische Religionsgeschichte*, Leipzig, 1898.

also by Rhys-Davids in his volume in the series of American Lectures (1896). Professor Bloomfield's introduction to his translation of the Atharva-Veda (in the "Sacred Books of the East") gives an interesting sketch of the functions of the Atharvan priest. Professor Jackson has collected the traditions concerning Zoroaster (1), and has given a tentative sketch of his life. The relation between the Indic and Persian religions is still in debate, as well as the influence of surrounding non-Aryan tribes on these religions. The history of the Persian sacred books presents many obscure points. Darmesteter's theory, that the Gathas were the product of the Philonic period, has been received with little favor by Avestan scholars. General histories of the religions of India are given by E. W. Hopkins (in Jastrow's "Handbooks") and E. Lehmann (in Saussaye), and a history of the Persian religion by Lehmann (*ibid.*), who has a section on the pre-Zoroastrian Eranian religion.

For particular points in the religions of Greece and Rome, we may refer to Roscher's *Lexikon*, and to the articles and book-notices in the various magazines devoted to classical philology and archaeology. The earlier stage of Greek theistic belief is discussed by Reichel (2), and a condensed general sketch of Greek religion is given by Gruppe (3), in the *Handbuch der klassischen Altertumswissenschaft*; contributions to the subject are found also in P. Stengel's volume on cultic antiquities in the same series (2d ed., 1898). Professor Max Müller reiterates his often expressed opinions on the relation between religion and language (4), defending his position against the numerous assaults that have been made

(1) A. V. W. Jackson, *Zoroaster*, N. Y., 1899 [1898].

(2) W. Reichel, *Über vorhellenische Götterculte*, Vienna, 1897.

(3) O. Gruppe, *Griechische Mythologie und Religionsgeschichte*, I., Munich, 1897.

(4) F. M. Müller, *Contributions to the Science of Mythology*, 1897.

on it. So far as regards his assumption of a recognizable pan-Aryan religion, this must be regarded as not proved, though it is in itself not impossible; obviously, the individual religions must be more thoroughly examined before so large a thesis can be established. How far certain myths may be regarded as arising from language, is a point not yet clearly set forth; but few scholars are willing to go with Professor Müller so far as to hold that mythology is almost wholly (and religion largely) a mere poetical view of nature. Greek eschatology has been elucidated by Rohde (1), Kaufmann (2), and Wheeler (3); the value of Professor Rohde's exposition of the Greek cult of departed souls is well known; Dr. Wheeler shows how the rise of individualism in the sixth and fifth centuries B. C., in connection with the worship of Dionysos (the Eleusinian mysteries) affected the Greek faith in immortality. The influence of the mysteries on Christian ritual is examined by Kern (4). The early relations between the Greeks and the Semites have long been recognized, and the mutual influence of the religions of the two races has formed a subject of discussion. Mr. Brown (5) is inclined to estimate the Semitic influence on Greek mythology very highly; here is a wide field for surmise, in which it is necessary to proceed cautiously, though it seems reasonably certain that some Greek cults (as that of Aphrodite) are of Semitic origin. In this connection may be mentioned the publication (under the editorship of F. Cumart) of *textes et monuments* relating to the Mithraic mysteries (Brussels, 1899), and the *essai* of A. Gasquet on the subject (Paris, 1899). On the

(1) E. Rohde, *Psyche*, Freiburg i. B., 2d ed., 1898.

(2) K. M. Kaufmann, *Die Jenseitshoffnungen der Griechen und Römer nach den Sepulchralinschriften*, Freiburg im Breisgau, 1897.

(3) B. I. Wheeler, *Dionysos and Immortality* [Ingersoll Lecture], Boston, 1899.

(4) O. Kern, *Bei den Mönchen auf dem Athos*, Hamburg, 1898.

(5) R. Brown, *Semitic Influence on Hellenic Mythology*, London, 1898.

Roman religion we have to note the general work of Aust (1), and the special investigation of festivals by Fowler (2), a sort of inquiry of great moment.

For the immense folklore material recently collected, we must refer to the various Folklore Journals in England, France, Germany, Italy, America, and elsewhere. The term folklore has generally been understood to mean the mere external survivals of religion, the usages, once religious, from which the religious spirit has departed. There is now a disposition, in some quarters, to extend its meaning so as to include existing forms of savage religion; whether this extension is desirable seems very doubtful.

(1) E. Aust, *Die Religion der Römer*, Münster i. W., 1899.

(2) W. W. Fowler, *The Roman Festivals of the Period of the Republic*, London, 1899.



DEGENERATION:
A STUDY IN ANTHROPOLOGY

WILLIAM W. IRELAND, *Edinburgh.*



THROUGH countless ages our globe has been subject to many and great vicissitudes of climate. Both before and after the first appearance of life there has been a gradual cooling of the surface. Some geologists hold that there have been periodical changes in temperature lasting through myriads of years.

There have been many wide shiftings in the distribution of land and water, in the nature of the soil, and in the quantity of the salts which the seas hold in solution. These changes have had a great effect upon the life, size, and vigor of plants and animals. We know that whole generations which once flourished over vast areas have passed away, leaving no descendants. In South America, in Australia, and in India, we find the remains of gigantic animals which have been succeeded by dwarf specimens of the same genus,—huge marsupials, megatheria, and antelopes, now represented on the same areas by smaller beasts of kindred forms. Though there are a few marine species whose shells are found in the older rocks, which still live in our seas, by far the greater number of the animals and plants whose petrified remains are in our museums have become extinct. Hence we may ask: will man himself escape the fate which seems to hang over species

as well as over individuals?—has man already degenerated?—was there ever a golden age when our forefathers surpassed in strength of body and length of years all men who live in these latter days? The sober researches of the archaeologist have not confirmed these mythical traditions or poetic fancies. This is the sum of what I have learned in my studies of the history of the men of the past: *What we are, they were.* Since the earliest times men have been much the same in stature, in strength, in longevity, in mental capacity, even in courage and endurance; they are the same in their desires, their pleasures, their passions, even in their tastes, in everything save in their affectations, in their artificialities. Some differences can be made out, as we shall see; but relatively to the whole they are not great.

The earliest remains of paleolithic man which have been explored in France and Germany, present two types, the Canstadt race, whose skulls show a prominence of the superciliary ridges, large orbits, and a receding forehead, with prominent nasal bones and projecting upper jaw. The stature might be from five feet six inches, to five feet eight inches. The bones indicate an athletic build. The skeletons found in the cave of Cro-Magnon belong to a tall race which inhabited France about the same time, one skeleton indicating the height of five feet eleven inches. M. Hamy gives five feet ten inches as the mean height; the skulls are large and finely proportioned. It is to this race that those hunters of Aquitaine belong who have left sketches engraved with flint tools on the antlers of reindeer. These sketches indicate an artistic capacity, but with these men the inventive arts were rudimentary. They had no pottery, no domesticated animals, and no agriculture. Their remains, coeval with the glacial period, can scarcely be less than ten thousand years old. Some of the prehistoric skulls found in France have a larger capacity than the average skull of the present Frenchman, or even than that of any people now living in Europe.

This race disappeared from France during the glacial period.

The fossil remains found at Mentone, about seven years ago, evidently belonged to persons of great stature, with large heads, and possessing most of the characteristics of the Cro-Magnon race. Later than these are the neolithic men, whose skeletons are found to be somewhat shorter than the remains of men of historic times; but the greatest difference is only thirty-seven millimetres between the average height of the men of the neolithic period (1,625 mm.), and those of the early historic period (1,662 mm.), and only twenty-three millimetres between the neolithic men and the average Frenchman of to-day, (1,648 mm.). These neolithic men, though of inferior physical frame to the dwellers in the Cro-Magnon and Mentone caves, were much more advanced in the inventive arts; they grew wheat and barley, an improvement in diet of the highest importance; they had also flax, which they twisted into cordage and nets, and wove into cloth; they had pottery and some domesticated animals. It was this race that built the pile dwellings in the lakes of Switzerland and Northern Italy. Their skulls resemble those of the ancient Basques.

Coming to historical times, we think that the Greeks surpassed in mental power, and equaled in physical strength and activity any living people. They clearly understood the effects of diet and exercise, and training for the athletic games was refined into a science; but they had none of our exact time records, and nothing is known of their achievements at the Olympic and Isthmian games, save some tales of wonderful feats which provoke incredulity. We gather from Xenophon that the average march of the Greek soldier was about eighteen miles a day, which would be thought very good marching in our times. The march of Lord Roberts from Cabul to Candahar, or Napier's from the Red Sea to Magdala, shrinks considerably in glory, and as a test of endeavor, when compared with Alexander's march from the north of the Indus to Persepolis through the Gedrosian desert, or Hannibal's through the south of France and across the Alps.

In marching with heavy loads, the Roman legionary seems to have surpassed what would be expected of the most robust soldier of modern times. It is noteworthy that the Roman armies do not seem to have suffered much from disease. The Romans did not pretend to be stronger than other European nations, but attributed their conquests to their continual exercises, strict discipline, and great skill in the art of war. Vegetius writes: "What could the fewness of the Roman soldiers have done against the vast numbers of the Gauls? How could they have dared with their short statures to cope with the big Germans? It is clear that the Spaniards were always superior to our men, not only in numbers, but in bodily strength. We were always unequal to the Africans in stratagems and wealth, and no one ever doubted that we were surpassed in arts and wisdom by the Greeks; but against all it was sufficient to choose fit recruits, to teach them the law of arms and discipline, and to render them robust by daily exercise."

A French writer states that the minimum height of a Roman soldier, who was allowed to enlist at seventeen, was sixty-four inches, the same as that now required for the British infantry. Vegetius tells us that Marius exacted a height of from five feet ten inches (67.6 inches, British measure) to six feet (69.76 inches) for the first cohorts of the legions, and for the cavalry of the wings. But at that time, he adds, there was a larger multitude to choose from, and recruits were more ready to come forward. It was Marius who first allowed the lowest of the property-classes, the *proletarii* to enlist in the legions. In the time of Vegetius the soldiers were drawn from all parts of the Roman world, but mainly

(1) *De Re Militari*, cap. i. There is a similar passage in Cicero, in which superior physical strength is assigned to the Gauls. Polybius tells us that the Italians naturally surpassed the Africans and Carthaginians in strength, courage, and presence of mind.

According to Josephus, the equipment of the Roman legionary consisted of a helmet and a breastplate, a shield, a pilum above six feet long, with a triangular steel head of nine inches, also another javelin half the length, with a

from Gaul, Illyria, and Spain. He also tells us that in the reign of the Emperor Gratian the troops gave up wearing breast-plates, for the first time. Soon after they laid aside the heavy helmets, which exposed them to the arrows of the Goths; their spears were shortened and their burdens lightened. This was mainly due to a decline in military spirit and discipline, but may have been partly owing to a diminution in physical strength.

The Romans described the Gauls as a tall race, and they had a high idea of their prowess. Cæsar tells us that the Gauls mocked at the shortness of his soldiers. The mean height of the French conscript of to-day is about sixty-four inches. This and other considerations have led French antiquarians to observe that we do not find in France to-day men of the great height of the Kymric Gauls of twenty centuries ago. In France the Aquitainian type has prevailed, people of short stature, with rounded heads and dark hair. Cæsar tells us that the Germans were of still greater stature than the Gauls; and this is confirmed by Tacitus and other ancient historians.

Though the Roman Empire was favorable to the spread of the arts of peace and the increase of population, the conquests of the republic were gained at the expense of frightful carnage; whole nations were massacred or sold as slaves, and these always included peoples like the Carthaginians, Numantians, and Epirots, who had most spirit and made the bravest resistance.

It is especially difficult in ancient history to distinguish between the dissolution of states and the degeneracy of individuals; these did not always go together. The Greeks fell under foreign rule through the character of their political organization,

head of five inches; three darts were carried in the shield. He was also armed with a sword and dirk, and carried with him a hatchet, a pickaxe, a saw, a basket, a thong of leather, and a hook, with provisions for three days. Under this load the soldier was trained to march even in summer, at a regular pace, twenty Roman miles (about nineteen English miles) in five hours, and in quick step, twenty-four Roman miles (twenty-two English miles) in the same space of time.

which was very favorable for individual culture, but ill-fitted for common defence. The Greek world was made up of numerous small republics, jealous of their freedom, but without sufficient union or common spirit to resist the centralized governments of Macedonia and Rome.

The poets and historians of the days of Julius Cæsar and Augustus, loudly proclaim the corruption of the age,—the result of countless riches and the ready means of sensual gratification quickly gained by the plunder of nations less brave, less united, or less skillful in war, and kept up by foreign tributes and the labor of thousands of captive slaves. Immoderate eating and drinking and sexual indulgence no doubt led to physical degeneration; but the first signs of decline observed in Rome, as had been the case in Greece, were a deepening moral turpitude. Prominent amongst the proximate causes of the decline of the Roman Empire were the increase of a centralized power upheld by military despotism, exhausting taxation, with a decrease of the free population, the passing of the land into a few hands, and its being cultivated by gangs of slaves, the mixing of the lower class of citizens as a consequence of the manumission of the slaves, and the steady decrease in the numbers of the nobles. Tacitus tells us that in the time of Tiberius very few of the old Roman patricians remained; and even those families which had been ennobled by Julius and Augustus, had become exhausted. A wide survey of history justifies us in the conclusion that exclusive and privileged classes sustained upon the labor of others are generally unable to keep up their numbers. We know, for example, that the Spartan citizens reckoned by Herodotus at eight thousand had dwindled down to one thousand in the time of Aristotle, about one hundred and forty years after. A hundred years later, in the reign of Agis, they had sunk to seven hundred, and of these one hundred possessed nearly the whole landed property of the state. This failure in reproductive power has been noted both in ancient and in modern times, and in various countries. The

Venetian oligarchy, the burgesses of Berne, the nobility of England and Spain, are conspicuous examples of it. Doubleday attributed this decline to diminished fecundity due to a larger consumption of those flesh meats in which the wealthy classes are able to indulge. Whatever may be the merit of this explanation, the details furnished by Doubleday, in his "True Law of Population," amply prove the falling off of many exclusive families and societies. It does not hold good of the high castes in India, such as the Brahmins and Bajputs, who are most exclusive in their marriages. They are very numerous; but most of them are poor, and generally abstinent of the flesh of animals. There are probably several other causes which tend to thin exclusive families. The keeping up their wealth by marrying heiresses tends this way, as heiresses are generally only daughters, or the survivors in delicate families, and are rarely as fertile as wives from large and healthy ones. Whatever may be the causes, diminution of the race is a grave symptom of degeneracy.

The Germanic peoples who conquered the Roman provinces of Western Europe degenerated much more quickly than the Romans had done. Becoming, at a bound, the masters of a softer and more civilized population, without possessing the administrative capacity of the Romans, they were content to live in sloth and unwonted luxury, and left the details of government to the educated provincials, till they lost much of their old military spirit. Sixty years after Odoacer made himself king of Italy, the Vandals in Africa and the Ostrogoths were subdued by Belisarius, a skillful general who formed his armies out of other barbarian tribes that had not yet lost their primitive hardihood. The monarchy of the Franks was founded by Clovis, who between 486 and 507 A. D. extinguished Roman rule in the north, and pushed back the Visigoths to the south, and the Burgundians, on the east of France. The profession of Christianity by the Frankish kings does not seem to have bettered their lives. The history of the two hundred and sixty years during which France was

under the Merovingians is a record of debaucheries, cruelties, perfidies, and murders. Power by them was valued only as a means of gratifying their brutal ardor for the material enjoyments of life, and insatiable greed. The simplicity of the ancient manners disappeared with the poverty, hardship, and struggles of their life within the old forests of Germany. The mode of life of the German youth tended to retard puberty, and the women were chaste. Polygamy was in vogue among the Merovingian kings of France'. Nevertheless, they had few children who survived. A similar degeneration took place amongst the chiefs of the Frankish conquerors, though perhaps to a lesser degree. The long-haired kings became mere puppets in the hands of the mayors of the palace, who did everything in their name, and kept the princes in laziness, softness, and luxury. They are called *insensati* by the chroniclers, or *rois fainéans* by the French historians.

Pepin Heristal and his son Charles were the last two mayors who held the real without the nominal power. Charles Martel drove back the Saracens, who had wrested Spain from the degenerate Visigoths and borne the green banner of Islam to the heart of France. In the days of his son Pepin, the last of the long-haired kings entered a monastery. Under Charlemagne, who succeeded Pepin, the old military spirit of the Franks had a glorious revival. Heristal, Charles Martel, Pepin, and Charlemagne were all men of great vigor and capacity; but the sons of Charlemagne proved incapable of defending his wide empire

(1) This is noted by Ameer Ali in his "History of the Saracens." A point like this might be made against many later princes ruling over monogamous nations. Kings like Charles V. or Louis XIV. were practically polygamists, and the same might be said of the nobility of Europe. We may recall that when Queen Caroline was dying she advised George II. to marry again. "Non," replied his majesty, "j'aurai des maitresses." "Mon Dieu," observed the poor Queen, "cela n'empêche pas."

"Of the four sons of Clovis," says Michelet, "one only, Clotaire, left any posterity, one only of the four sons of Clotaire had children. Those who

against a new and fierce race of spoilers who found their way from Scandinavia across the North Sea.

These were the last of the invaders that swept over Western Europe. They came upon countries already shorn of wealth and thinned in population. After ravaging the coast, they settled in various parts of the British isles, and founded a dukedom in the north of France. It is noteworthy that the Normans did not degenerate like the conquering hordes who came before them. Giving up the worship of the war god Odin, they became Christians. They took on the civilization of the times, and advanced it. Though greedy and licentious, they had greater self-restraint, and did not indulge in the gross intemperance of the Saxons and other Germanic conquerors. "The Normans," says Volaterra, "are a cunning and revengeful people; eloquence and dissimulation appear to be their hereditary qualities; they can stoop to flatter; and unless they are curbed by the restraint of law, they indulge in the licentiousness of nature and passion. Their princes affect the praise of popular munificence; the people observe the medium, or rather blend the extremes, of avarice and prodigality; and, in their eager thirst of wealth and dominion, they despise whatever they possess, and hope whatever they desire. Arms and horses, the luxury of dress, the exercises of hunting and hawking, are the delight of the Normans; but on pressing occasions they can endure with incredible patience the inclemency of every climate, and the toil and abstinence of a military life."

Everywhere in Europe the Normans made their influence felt.

followed died almost all in early youth. They seem to have been a peculiar species of men. Every Merovingian was a father at fifteen and decrepit at thirty; most of them did not reach even that age. Charibert II. died at twenty-five, Sigebert II. and Clovis II. died at twenty-six and twenty-three, Childeric II. at twenty-four, Clotaire III. at eighteen, Dagobert II. at twenty-six or twenty-seven, etc. A symbol of this race were the "*Énervees*" of Junniège, those young princes whose joints were cut, and who were turned adrift in a boat down the river that bore them towards the ocean, but they were saved, and received into a monastery. Who cut the sinews and broke

A Scandinavian dynasty ruled for seven hundred years in Russia. Small bands of Normans founded principalities in Apulia and Sicily. They were foremost in scaling the walls of Jerusalem, and a Norman, the Odysseus of the second crusade, reigned at Antioch. After the Norman conquest of England, soldiers of fortune made their way north, and appeared in the courts of the Gaelic kings, and gained estates and commands amongst the Saxon population of the south of Scotland, though the pitiless spoilation of England might have made the Scottish kings wary of these encroaching adventurers. Norman names are still common in Scotland.

The six hundred years which followed the dissolution of the Roman Empire form the darkest period of human history. It seemed as if men were beginning to lose even the useful arts necessary to maintain society. Violence, rapine, fraud, and perjury ruled everything. The books written in these times show a dire stupidity, an ignorant credulity. The statues remaining seem the work of children; the pictures are wretched daubs which show an ignorance even of the human figure. The great aqueducts, which from the purest sources supplied water to the Roman towns, had fallen into ruins; and now the people had bad water, bad food, bad lodging, and lived in poverty and dirt, disturbed by continual alarms and oppressions. We read of dreadful famines and epidemic diseases; scurvy was common with every class in Northern Europe, and leprosy prevailed in every country. Significant of the hardness, misery, and alarms of the times, are those mental epidemics which have for their substratum

the bones of these children of the barbarian kings? It was the premature entrance of their fathers upon the wealth and luxuries of the Roman world which they had invaded and conquered. Civilization gives light and enjoyment to men. Enlightenment and intellectual occupation counteract among cultivated minds the enervating effects of physical enjoyments. But barbarians who find themselves suddenly placed in the midst of a disproportioned civilization, accept no part save its enjoyments. It is not to be wondered at if they are consumed by them, and melt away as snow before fire."

a weak and excitable nervous system, a susceptibility to dominant ideas, and a diminished power of self-restraint. Of this kind are the migratory impulses which sent hundreds of thousands of crusaders, wave after wave, to perish on the plains of Asia Minor.

A pathetic instance of the ignorance, folly, and nervous excitability of these wretched times, is afforded by the children's crusades¹.

Other epidemics of morbid, nervous excitement spread over large territories in the twelfth and thirteenth centuries.

There were the Brethren of the White Caps, who collected in the south of France to save their homes from the disbanded mercenaries of Henry II. and Philip Augustus. Provoking the feudal nobility, they were put to the sword or scattered. About 1250, the Pastoureaux, or Shepherds, in Flanders and Northern France, roused by a religious pretender against the greed and idleness of the clergy, gathered to a multitude of a hundred thousand persons. When they took to killing the priests and plundering the monasteries, public feeling turned against them, and they were slain or dispersed. Another outburst of epidemical religious insanity was afforded by the Flagellants, who in 1260 from Northern Italy spread over Germany and Hungary, lashing themselves and doing penance. This excitement was suffered to subside of itself. In 1399, persons in white linen vestments, with their faces covered and bent towards the ground, and bearing before them a great crucifix, passed from province to province and from city to city, all over Italy, crying out, "Misericordia." This movement, which in some respects resembled the religious revivals of our own times, was accompanied by a marked though transient reformation of morals.

Hecker, in his "Epidemics of the Middle Ages," has described some past nervous maladies which are propagated on the wings

(1) *The Children's Crusade, an episode of the thirteenth century*, by George Z. Gray, London, 1871.

of thought and convulse the mind by exciting the senses. The Dancing Mania appeared at Erfurt in 1237, at Utrecht in 1278, and at Aix-la-Chapelle in 1374. Groups of people began to dance in the streets and churches for hours together seemingly without control, till they fell down exhausted. They complained of extreme oppression, and groaned grievously; some were haunted by visions during their dance. In a few months this epidemic spread over the Netherlands and broke out at Cologne, where the number of those possessed amounted to more than five hundred, and at Metz to eleven hundred. It was attributed by the clergy to demoniacal influence. A similar epidemic appeared at Strasburg in 1418, whence it descended the Rhine country and spread through Belgium. The sweating sickness and tarantism of the middle ages afford further proofs of a depravation of the human constitution. Suffering has an immediate effect upon the nervous system, and the misery and oppression of the times were manifested in brain excitement and motor restlessness.

It would be too much to say that any of the faculties of the human mind fell out of use, even in the darkest of the ages. If the art of sculpture seemed lost, architecture asserted itself in the stately piles of cathedrals, and the lofty towers and battlements of castles. There were always monasteries to which men of studious and peaceful lives might retire to keep up the spirit of scholarship, piety, and compassion. Some of the monks were diligent in reclaiming abandoned land; others copied the literary masterpieces of antiquity, which served to keep up a memory of better times. Wherever men escaped from the oppression and misrule of the feudal system, there was a rallying point for free thought, and the dawning of a new civilization different from that of antiquity lightened the horizon. Between the building of Rome and its capture by Alaric, what great things were done throughout the ancient world in architecture, sculpture, painting, philosophy, jurisprudence, history, poetry, and all the elegant arts! Yet during this long period of about twelve hundred years,

scarcely a single useful invention was made, though old ones were improved. On the other hand, from the twelfth century down to our own times, there is an unbroken succession of inventions to lighten labor and make the human lot happier. It is recorded that the Emperor Nero, who was short-sighted, used to view the gladiatorial games through a cut emerald; but no one had the wit to observe that a concave glass would enable a short-sighted man to see distant objects clearly. The invention of spectacles was left to Salvino d'Armato, a gentleman of Florence, who died in 1317. The most important amongst the useful inventions made during the middle ages were stirrups, chimneys, knitting, wind mills, clocks, the compass, gunpowder, linen paper, and printing. The distillation of alcohol is attributed to Albucasis or to Arnold de Villeneuve in the twelfth century.

Some of these inventions may have originated in Arabia or been transmitted by the Arabs from China. At the time of the crusades the Franks were behind the Mussulman and the Byzantine Empire. The civilization of the Arabs sprang up quickly, flowered brightly, and came rapidly to maturity and decay, while the citizens of Constantinople, heirs of the Greek tongue and the Roman polity, went on copying the old classics and adding annotations, but originating nothing, and learning no practical lesson from the history of a heroic past. The Byzantine Empire was like an old tree, rotten in the trunk, but still putting forth leaves. The civilization of Western Europe was of a slower but a healthier growth, and went on throwing out new branches and waxing in girth and height, till now it overshadows the earth.

Careful examination of mediæval skeletons shows that they did not fall below the average stature of those of Europeans of the present day. Some of the weapons used indicate great muscular strength. The execution done by the English archers in the times of the Plantagenets would scarcely be credited, had their feats not been performed in the full light of history. In the formal directions sent to villages for the maintenance of archery

butts, it was ordered that no man above the age of twenty-four should shoot with the light arrow at a distance under two hundred and twenty yards. It would thus appear that up to this distance practice was made with the heavy war arrow. I doubt whether those who play at archery at the present day would be able to shoot half the distance. No doubt the power of the old English archer was partly due to the development of certain muscles of the arms, owing to constant exercise, and to the skillful throwing of the strength of the whole body into the discharge of the shaft. In those times England was probably the best governed country in Europe. The yeomanry enjoyed ease and prosperity, and the peasantry probably fared better than they do at present.

In some species in the vegetable and animal world the atrophy or disappearance of important organs has been observed. For example, the *Proteus*, living in dark caverns in Carniola and Carinthia, and the fishes in the Mammoth Cave are without eyes; lizards only retain rudimentary limbs, and birds living in far away islands secure from pursuit have wings which do not raise them above the ground; some crustacea begin life as free swimming animals, and end by fixing themselves on their stalk. Thus the nauplius begins life as a free swimming shrimp; in the end, it becomes a parasite on the hermit crab, and turns into a mere sac, absorbing nourishment from its host. It has been supposed that new species have been produced, not by the ascent to higher forms, but by the degradation of old ones; the creatures assume a less specialized structure, and become fitted for a lower state of life. The principal causes of this degeneracy are assumed to be abundant food and safety secured by little effort. The analogy drawn from these retrogressions, and from the results of disuse in man seem to me of little value save for rhetorical illustration. There are some organs, such as the muscles of the ear, which seem to have undergone atrophy. The thyroid gland used to be pointed out as a useless structure, but within the last few years

it has been found that it possesses important functions in sustaining the development of the body and the activity of the brain. Indolence and want of spirit, in secluded communities, may lead to a permanent loss of industry, perseverance, and enterprise, as in the case of the Polynesian islanders, who are generally regarded as the descendants of peoples superior in culture. In human beings, however, mental faculties, long dormant, seem to be capable of revival. It has been found that the children of savages in the Polynesian islands who have no names for numbers beyond five, are able to learn arithmetic and even geometry. The appearance of what has been called arithmetical prodigies in families of low condition and culture, shows that special talents may spring up without any known hereditary antecedents¹.

The fitful spreading of epidemic diseases can only be accounted for by the supposition that the human constitution is more predisposed to yield to their attacks at one time than it is at another. Take the case of a malady which in the form of *cholera nostras* has been known to physicians since the time of Hippocrates. Asiatic cholera was first observed by the Portuguese physicians in the sixteenth century on the Malabar coast, whence it now and then invaded other parts of India. At the beginning of the nineteenth century, it settled in the Delta of the Ganges, where it was previously unknown; and in 1817 it was most virulent. At present, it is endemic in Lower Bengal. In spring the disease ascends along the Ganges towards the Central Provinces, often reaching particular places about the same day every year. Some years it will come no higher than Patna or Benares, or it may advance as far as Cawnpore, Agra, and Delhi. In other years the epidemic shows unusual activity; it enters the country of the Five Rivers, and spreads as far as Peshawar. At rarer intervals, the pestilence advances to Cabul, and passes through Persia to

(1) See paper on *The Arithmetical Faculty and Its Impairment in Imbecility and Insanity* in *Journal of Mental Science* for July, 1891.

Asia Minor and Europe. It has visited Britain four times, and twice it has crossed the Atlantic to America.

The same fitful and intermittent character is observed with the plague. Generally haunting Egypt and the Levant, it has several times assumed a direful activity, carrying death over Asia and Europe. We may recall the plague at Athens, described by Thucydides. The pestilence during the reign of Justinian caused, as we are informed by Gibbon, "a visible decrease of the human species, which has never been repaired in some of the fairest countries of the globe." The *mortifera pestilenzia* in 1348, described by Boccaccio, is believed to have caused the death of a quarter of the population of Europe. At present the efforts of medical science are strained with but indifferent success to combat an invasion of the plague in the Bombay Presidency.

In 1889 and 1890 influenza, which for some years had given little trouble, spread rapidly through the whole world, causing many deaths, especially amongst weakly people, and leaving behind a depressed state of constitution and a tendency to melancholy and suicide. These sudden outbursts of morbid activity are supposed by many to indicate periodical or cyclical changes in the human body which must be the result of causes widely diffused throughout the globe. These pandemic waves do not appear to leave behind bad effects amongst those who have not been visited by the diseases.

In 1493, a disease hitherto unknown appeared in Spain and Italy, and rapidly spread through Europe, especially amongst the soldiers. It was clearly described by Villalobos¹, the physician of Charles V., in his "Sumario," written between 1493 and 1495. At first the malady was attributed to divine wrath against sin, or to the conjunction of Mars and Saturn. In reality, it was a contagious disease, brought from Hispaniola by the com-

(1) See *The Medical Works* of F. L. de Villalobos, translated by G. Gascoin, London, 1870.

panions of Columbus. Like all epidemics invading a population for the first time, its ravages were most severe at the outset; but it is still common in Europe and Asia. In its severe forms, it brings with it a host of diseases, and hands down a depraved constitution to the third generation.

It is singular that the question has never been put, whether, so far from these sudden outbursts of morbid activity indicating cyclical changes in the human body, the converse may not be true,—that they are due to some subtle changes in our planet, some occult influences in the air or earth or the sun, which at various times impart new vigor to the constitution of man, intensify his feelings, quicken his thoughts, and arouse his spirit of enterprise. The reading of history shows that whenever there is great mental activity amongst one people, there is generally a like unusual activity among the people of other countries. This may be accounted for, to a certain extent, by the impulse which one stirring nation gives to another. To prove our theory, we ought to be able to show, that, in general, there is increased energy over the face of the earth amongst nations holding little intercourse, and not apt to influence one another. This is a difficult task, for we seldom have a complete history of the intellectual and moral development of all nations at parallel periods. I shall, for the present, content myself with briefly indicating a few ages of great mental activity exhibited by nations living widely apart and almost unknown to one another.

Sakya Muni, the founder of Buddhism, was born in 622 B. C., and died in 543. During his life of eighty years, there were many great men and signal events in the world's history; in India lived Mahavira, the founder of the Jaini sect; in China Confucius flourished, and letters and philosophy rose to a height never before reached. Confucius was the contemporary of Pythagoras and Pindar, of the Seven Wise Men of Greece, and of Anacharsis the Scythian, of Ezekiel, of Jeremiah. About this time Cyrus founded the Persian Empire, and the Phœnician navigators sent by Necho sailed around Africa.

The Augustan age of Roman history is another period of great mental activity. It was a period of as great activity in Persia as in Italy; Virgil and Kalidasa, the great dramatic poet of India, were contemporaries, though quite unknown to each other.

One of the most momentous periods of history was the close of the sixteenth century. During this time there lived Tasso, the greatest epic poet of Italy, Camoëns, the greatest epic poet of Portugal, Galileo and Kepler, Cervantes, Montaigne, Shakespeare, Bacon (and a crowd of other authors), besides many great statesmen, generals, and artists. This most flourishing period of European literature was the most flourishing period of the Mahometan literature and rule in India. During the reign of the great Mogul emperor Akbar, lived Aboulfazl, and the historian Ferishtah. Akbar himself superintended translations from the Sanscrit classics into Persian. This was also a time of unusual activity in China and Japan.

It can not be shown that these great parallel events were incited by one another, or could spring from any other influence than one common to the whole world.

Amongst the main causes of degeneration are extreme poverty, with its hardships and insufficient food, especially in the case of mothers, and during the years of growth. The Irish Catholics driven into Connaught by Cromwell and King William became a stunted and ugly race, with small heads and pregnathus jaws, whereas the native Irish are described by ancient chroniclers as strong and handsome. When supplied with sufficient food, however, these people showed that they had not lost the power of recovery. A hot and moist climate, especially if combined with malaria, is generally unfavorable to the healthy growth of the human race. The inhabitants of Lower Bengal are slender, delicate, weak, and short-lived; they are naturally timid, though possessed of much mental acuteness, suppleness, and tact. The Mahometan conquerors of India who settled in Lower Bengal, soon learned to dread the climate of that moist and fertile country,

which they called the garden of death. Their descendants became feeble like the natives. It is certain that Britons settling in this country, with all the help and services of the Bengalis to save them from exposure to the terrible sun, would become extinct by the third generation. The British conquerors of India can never hope to settle in the plains of that wide country; even in the hills it is unlikely that they could maintain their vigor. Other races have greater power of resistance to a hot climate. The Portuguese maintain themselves in Brazil within the tropic of Cancer, and the negro race attains a good stature and great muscular power on the West Coast of Africa, where the climate is death to most Europeans. On the other hand, the negro does not seem to be able to keep up his race even in temperate climates. The combined experience of ten Southern cities in the United States, including Washington, Baltimore, and New Orleans, shows a death-rate of 20.1 among the white, and of 32.6 among the colored population, though the age distribution of the latter race is far more favorable to a low general death-rate than that of the white population. In the Northern states the colored race does not hold its own, the deaths outnumbering the births. The apparent increase of the dark population is due to migration. Mr. Hoffman has shown that the mortality in the colored race is increasing, while the mortality amongst the whites is diminishing.

From the dawn of history, mankind has been divided into certain races whose features and characteristics have remained unchanged. We can not explain these persistent differences in color, features, size, and mental capacities. If we ask why the Akkas are so diminutive in size, and so degraded in their habits, the only answer is that they are probably the remains of a race of dwarfs who have dwelt amongst the forests in Central Africa since the days of Herodotus. It is, however, known that the Bushmans or Bosjesmans, now the most degenerate of savages, are a branch of the once extensive nation of the Hottentots, originally a pastoral people. They were driven by the European

colonists and by wars with neighboring tribes into the clefts of the rocks or burrows in the desert, and thus converted into fierce, suspicious, and vindictive savages.

On the other hand, it is difficult to understand why the Japanese, who have always been known to be brave, active, and athletic, are of such short stature. It seems to me likely that they are descended from races which have long lived in the cold regions of Northern Asia. A cold climate seems favorable to the growth of some races, at least if they are sufficiently fed and properly sheltered. On the contrary, if they have wretched and scanty food, and poor lodging, they become weak and stunted. It has been suggested to the Japanese that in order to grow bigger they should take to beef-eating, surely an unsatisfactory remedy. It is an old notion that peoples who live principally on flesh meat have more endurance than those who live on a less stimulating diet, and the Huns and Moguls are given as examples. On the other hand, the Afghans, who live principally upon bread, curd, and water, are renowned for their military prowess, as also the Arabs, whose food is composed of bad bread, millet, camel's milk, butter, and oil. Their drink is water; and flesh meat is little used. "Amongst the tribes of Africa," observes Foissac, "one sees that men forced by the want of cattle to live on vegetable productions are neither more nor less timid and gentle than those who live on fish and the flesh of animals."

A careful distinction should always be made between the dissolution of government and the degeneration of individuals, as the decline or breaking up of a state may be owing to causes distinct from the degeneration of the individual members. As we have seen, this was the case with the ancient Greeks. At the present day the Chinese Empire seems to be falling to pieces through defects in the government power of the upper classes; but there is no proof that the Chinese themselves, at least for many generations, have deteriorated. The same may be said of the Turks; though

the Sultan's government is rotten and vicious, the Turkish soldier is as hardy and brave as when the Janissaries were the terror of Europe. The Greeks of to-day have obtained a free government, yet they have shown to the world very recently that they are not the men to make a new Thermopylae. It is held that most of the old Greek race has been swept away, and that the country is now mainly inhabited by people of Slavonic descent. Indeed, there is strong ground for the statement that there was more of the old heroic blood of Hellas' in the Turkish army of Edhem Pasha than in the soldiers of King George who fled before them three years ago.

In considering the question :—ARE WE DEGENERATING ?—we ought to distinguish, too, between a general decline of the population, and a deterioration in particular classes. We must also confine our observations to those nations of Europe and America which furnish us with trustworthy statistics. Were there any perceptible diminution in the tone of public health in these countries, it would be both strange and discouraging. Every class of the community now lives under better sanitary conditions than it did at the beginning of the century. Within the last fifty years wages have well nigh doubled, while the purchasing power of money has, in general, much increased. Working hours are shorter. These remarks hold good, not only of Great Britain, but also of France and Germany. Pauperism in Great Britain has much diminished, and education has overtaken every class in the British isles, as well as in Germany, France, and Scandinavia.

(1) After the Ottoman conquest the Turkish officials, every fourth year, carried off one-fifth of the males of the Greek population who were between the ages of six and nine. The strongest and most intelligent boys were chosen, and were trained for the Turkish army. Some of these tribute children rose to the highest offices in the army and state. This cruel exaction was enforced for the last time in 1676. See Finley's *History of Greece*, vol. v. pp. 35-163, Oxford, 1877.

The well-being of the working classes in North America can not be a matter of question. The progress of medicine and the diffusion of a knowledge of the laws of health, have already been of much benefit in mitigating suffering, checking diseases, and prolonging life. Through thoughtful researches and happy improvements the difficulties and perils of childbirth have been alleviated and removed, so that the lives of thousands of mothers are preserved. In the old times how many perished in their youth! Hear the wail of Medea:—

ἰλέγουσι δ' ἡμᾶς ὥς ἀκίνδυνον βίον
ζῶμεν κατ' οἴκους, οἱ δὲ μάρνανται δορί·
κακῶς φρονοῦντες · ὥς τρὶς ἂν παρ' ἀσπίδα
στῆναι θέλοιμ' ἂν μᾶλλον ἢ τεκεῖν ἄπαξ.

Euripides, *Medea*, ll. 248 ff.

Some diseases like scurvy, once so common, are seldom heard of now. This is owing to changes in food prompted by the discovery of the nature of the disease. Over indulgence in liquor is less prevalent than it used to be amongst the middle classes, and in some places is abating amongst the poorer classes. It appears that the people of the United States consume less alcohol than any of the northern European nations; but drunkenness is increasing in France.

In England statistics bearing upon public health scarcely go back to seventy years ago. The information they give, refers chiefly to the poorer classes, who by their number control every average. The change in England from a rural to a town population might be expected to be unfavorable to health and longevity. In 1861, 37.7 per cent of the total population of England and Wales was rural. In 1891 this population had decreased to

(1) "The men say that we women lead a safe life at home, while they must battle with the spear. Most ill-advised! For thrice had I rather stand beside the shield, than once bear a child into the world."

28.3 per cent¹. In 1871 the mortality was exactly the average of the past ten years, that is, 22.6 in the thousand. In 1872 the death-rate began to fall, and has ever since continued to do so year by year. In 1881 the mortality was no more than 18.9. Making allowance for a diminished birth-rate, there was thus a saving of the lives of about ninety-two persons each year, and for each death avoided we may put down at least four persons who escaped sickness.

The crude death-rate for the decade 1871–1880 was 21.27, that for 1881–1890 was 19.08; corrected for age distribution, the former rate becomes 20.84, the latter 19.08. This decline in the mortality has now extended to every period of life in both sexes,—a result due in great measure to the Public Health Act, which came into force in 1872, and was reinforced by an amendment in 1876.

Between 1871 and 1894 the death-rate from consumption has gone down by about one-third, and it is less by three-fifths than what it was in 1838. The diminution in the mortality was not owing to any special sanitary measures against that insidious disease, or to any new remedies. Direct contagion plays but a small part in the propagation of consumption, and the best proved preventives are free air and sunshine and a dry subsoil for the house.

In Scotland the death-rate rose from 1855, when it was 20.8 in the thousand, to 1875, when it was 23.4. This was no doubt owing to the increasing density of the town population. In 1876 the mortality suddenly fell, and continued to do so. In 1896 the death-rate for Scotland was as low as 16.9, and in 1897 it was 18.76 in the thousand. In general, the death-rate of Scotland seems lower than that of any country in Europe save Sweden and Norway. The diminished mortality told principally on children of school age, and next on persons in early manhood.

(1) For these and the following statements I am much indebted to the *Elements of Vital Statistics* by Arthur Newsholme, M. D., London, 1899.

The improvement was greater in the towns than in the country, though the mortality was still two per thousand less in the latter. This fall in the death-rate is mainly attributed to public sanitary improvements, a better water supply, more drainage, and the suppression of nuisances, removing influences depressing to the health, and preventing infectious diseases¹.

It has been observed by Mr. Herbert Spencer, that by our prevention of diseases through medical devices and hygiene, we are defeating the natural selective process by which the weak are eliminated. We are thus artificially preserving feeble stocks which may be expected to go on propagating their kind, and this must tend to the degeneration of the race. That a person living now has on the average a longer life, does not imply increased innate healthiness, but really implies increased amelioration of surroundings alone. But surely the same measures, while saving the weakly children from death, may increase the tone of health in those whose constitution is a little stronger, and even increase the growth and robustness of the healthy children. Sometimes

(1) Dr. Matthew Hay has pointed out that on comparing the death-rates in Scotland before the fall in 1876, we should take into consideration the lesser proportion of young children (who always swell mortality rates) and increased number of females (who have a lesser death-rate than men). If these sources of fallacy be eliminated, the corrected rate would be found to be for 1894 seven per cent lower than the rate in 1856-60, instead of ten per cent lower as in the registered rate; but the gain which remains is still substantial. As the decrease in the death-rates only commenced in England in 1871, and in Scotland about five years later, we can not tell how many members of the rising generation will attain old age. On making the corrections for age and sex, Dr. Hay found that they show the insular-rural districts to be still nearly twice as healthy as the principal towns, in place of being less than one-half as healthy, according to the registered rates. Nevertheless, one ought to bear in mind that the comparative death-rate would be lowered by the number of healthy young men and young women

children delicate in infancy grow up to great powers of mind and body. It is an evident gain to a child, that the diseases common to childhood should so far be averted, that they do not fall upon it in quick succession. We know that the fatality of scarlet fever has much declined, and as the death-rate becomes less in advancing years, the longer an attack is deferred, the less likely is it to occur at all; and should it come, the less likely is it to have bad consequences, or to end fatally. Infectious diseases may have carried off more weakly children in the past; but then they also weakened healthy children by their greater prevalence. Moreover, constitutional weakness is in many cases dependent upon antecedent insanitary conditions, and if we can succeed in bettering these conditions, we not only save the child's life from disease, but enable it to grow up healthy.

On the whole, we may fairly infer that this fall in the death-rate both in England and Scotland is a proof not only of long life, but of increase in health and in the enjoyment of life; and there is reason to believe that we have not yet gathered in all

who leave the country for employment in the towns. We can scarcely hope to make the race as healthy in the towns as in the pure country. Nevertheless, under good conditions town people are often healthy, and have much activity and staying power. Townsmen often make active and hearty soldiers. It has been shown by Quetelet, from observations made in 1823-27, that in some towns of Belgium the average stature was a little higher than in the country. Dunant found this to hold good in 1867 with the inhabitants of Geneva over the country people around. Villermé, Manouvrier, and others have shown that the stature of the Parisian conscript is higher by eight or nine millimetres than those of the rural arrondissements of the Seine. It may be here noted that Frenchmen generally prefer city life, and the well-to-do classes take to living in the towns even when they have lands in the country. Nevertheless, the general fact holds good, that for the conscriptions the country people give a greater average height, with fewer exemptions from disability, than those living in the towns.

the fruits of these important sanitary improvements, to which these benefits are in great part due.

In England, France, and Germany there is a decline in the marriage rate. The mean age at marriage has risen, probably owing to a higher standard of comfort in the home and domestic surroundings. There has been a decline in the birth-rate throughout the whole civilized world, not entirely owing to natural causes. It is greatest in France and Massachusetts. The death-rate in France is higher than in England; but this is in part due to the smaller number of children in each family.

The French have paid much attention to the question of degeneration of race, and, owing to their records of recruitments and conscription, they have a number of statistics upon the heights of the young men required for military service, and the number of exemptions. No one, of course, insists that size is a constant measure of capacity. Some men of low stature are strong and of great mental power, and the tallest men are by no means the strongest. Some of the drivers in the British artillery whose height is only sixty-two or sixty-three inches, but whose chest-girth is from thirty-four to thirty-six inches, are amongst the healthiest in the whole army. Dr. Carlier¹ has shown that the greatest average height is to be found among those classes in which we find the best means of health and nourishment, and the most intelligence; and amongst the poorer classes, in those who work at healthy trades in the open air. It has been found in the different Departments of France that the greatest military aptitude, as tested by the number of exemptions due to low height, weakness, and deformities, does not always go along with the highest stature. As a rule, however, the country conscripts are found taller, and with fewer exemptions, than those of the towns.

(1) *Des Rapports de la Taille avec le Bien-être, par le Dr. G. Carlier, Annales d'Hygiène Publique, tome xxvii. p. 294. Paris, 1892.*

The distinguished French statistician, M. Legoyt¹, thinks that it will take long periods of peace and plenty before France can recover the tall statures mowed down in the wars of the Republic and the first Empire. M. Boudin² in 1863, argued from the steady diminution of the number of exemptions from military service, combined, as he assures us, with increased strictness of medical examination, that the average height of recruits must have somewhat increased since 1832.

The death-rate is also diminishing, and every pertinent test that can be applied seems to prove that the young men in France have rather improved in physique than fallen off. M. Carlier quotes statistics which show that there is a marked and continuous improvement in the growth and development of the Saxons, Swedes, Belgians, and Savoyards³. There are statements about the increase of nervous diseases and of insanity in these and other countries which we have not yet disposed of; but the general result seems to be that in the countries mentioned, so far as the evidence of statistics goes, there is no falling off, but rather an increase in bodily growth and vigor in the whole population; and this has accompanied a great increase in the means of comfortable living and enjoyment. The military conscription which prevails throughout the continent, though a heavy tax upon the young men, helps to cultivate strength, endurance, and manliness.

Though the conditions in the New World are very different from those of the Old, most of them are favorable to the growth

(1) *De la Pretendue Degenerescence Physique de la Population Française*. Paris, 1864.

(2) *Études ethnologiques sur la taille et le poids de l'homme chez divers peuples, etc.*, analyzed in *L'Année Scientifique*, by Louis Figuier. Paris, 1876.

(3) M. J. Carret, *Études sur les Savoyards*.

of the race. The courage and vigor of the people of the United States were proved in the struggle between the North and South thirty-five years ago, and by their recent war with Spain. It appears from the statistics published for the United States Sanitary Commission¹ that the average weight of the native-born American soldier was about eighteen pounds more than that of the British soldier; but the age of the American recruits was greater, and they were, at that time at least, taken from a better-to-do class. Since then, the average height of some regiments in the British Army has diminished; but this is due to the new men not coming from the old recruiting grounds. This is especially true of the Highland regiments, for comparatively few Highlanders now enter the army.

The carefully prepared statistical papers of Bowditch² show that the children of American parents, boys and girls, from five to eighteen years of age, are bigger and weigh more than the children of Irish, German, or English immigrants. This he attributes to a more long-continued period of plenty and comfort enjoyed in the United States. It appears to me that there is a great improvement in the physique of the descendants of Irish settled in the United States and in Canada. Although there is a continual arrival of new comers, and from the earliest settlers we can only count nine or ten generations, a new type has already appeared in the United States. The men of this new type are tall and lank, and rarely have red cheeks; but they are tough and active, with great power of endurance, though prone to dyspepsia and nervous diseases.

An improvement in the general health of the community does

(1) Contributions relating to the *Causation and Prevention of Disease and to Camp Diseases*, edited by Austin Flint, M. D. New York, 1867.

(2) *On the Growth of Children*. Eighth Annual Report of the State Board of Health of Massachusetts. Boston, 1887.

not preclude a FALLING OFF IN SOME CONDITIONS. Let us briefly consider some of the most salient of these.

The rapid INCREASE OF THE TOWN POPULATION must heavily tax sanitary devices. The mortality in the towns is always higher than in the country. The sum is swelled by the wretched population that live in the poor quarters, and the number of sedentary occupations, conjoined with the difficulty of procuring proper food and exercise for children.

The depressing influences of want and unceasing dreary toil amidst unhealthy surroundings may be easily observed in the teaming hives of Lancashire and Yorkshire. While the country people are big and well knit, with broad chests, muscular limbs, and agile step, the children, healthy and rosy cheeked, with bright eyes, the dwellers in the foggy atmosphere of the manufacturing towns seem of a different race; they are short of stature, with narrow chests, pasty complexions, and a wornout, faded look. They often have a distinct stoop, and bowlegs are common. It is sad to note the effects of child labor in stunting the growth, and damping the buoyancy of happy childhood. In the poorest quarters of the large towns of England the enforced attendance at school seems only to add to the load of care and toil borne by the wretched children. To their six hours at school are added as many more at some poorly paid employment, and the Saturdays, and often the Sundays, are devoted to earning something to help the family income. When eight years old, the children are allowed to work half time at the mills. This checks their growth and retards their progress at school. Up to this age there is little difference in the size of the factory and other children, but when they reach twelve years, those employed in the factories are found to be three inches below the mean height of other children at that age. The average height of boys about twelve years at the English public schools is fifty-five inches, at the middle class schools fifty-four inches, of children of agricultural laborers fifty-three inches, and of factory children fifty-two

inches. The average weight of factory children has been found to be eighteen pounds below the general English mean at the same age. The average of health and strength in Lancashire is much lower than in other parts of England. Defects are common, such as stammering, squinting, rickets, and scrofula. Dr. Torrop, a certifying surgeon in Lancashire, found that among two thousand children there were one hundred and ninety-eight cases of disease and defects'. In the last century child labor was harder, and began at an earlier age; and, though the absolute number of children sent to early toil in the mills is now greater, their condition is probably not so grievous, and some improvement in their growth over former times may be claimed. A comparison of measurements of stature and weight given in the Report of the Factory Commissioners of 1833, and in the Report to the Local Government Board on Changes in Hours and Ages of Employment of Children and Young Persons in Textile Factories, in 1873, indicates a slight but important increase in weight at corresponding ages. The increase in weight amounted to a whole year's gain, and a child of nine years of age in 1873 weighed as much as one of ten years in 1833, one of ten as much as one of eleven, and one of eleven as much as one of twelve years, in the two periods respectively.

In answering the question, now so often asked—are nervous diseases increasing?—it must ever be remembered that the civilization of to-day, with its great appliances for the convenience of life and its tendency to lighten muscular labor, often exposes men to a strain to which our ancestors were little accustomed. We live a faster and more restless life, and the pull upon the brain is more exacting and more constant. We indulge more in stimulants and drugs which excite or lull the intellect and the senses,—tea, coffee, tobacco, opium, chloral, cocaine. An

(1) See the *Children's Labour Question*, The Daily News Office, London, 1899, p. 91.

increasing proportion of our population now lives in large towns instead of in villages or the open country. There is a great deal more travel. Railway journeys even of a few miles have a jarring effect upon the nerves, and indispose for steady application and calm enjoyment. We may thus reasonably expect that, with this increased strain, nervous exhaustion and breakdowns should be more frequent. Nevertheless, there are considerations on the other side which require to be weighed. Many of the changes complained of go to increase the amenities of life. If we move about more, we obtain more frequent amusement and change; if telegrams and telephones claim our attention and disturb our repose, they often banish uncertainty and anxiety; though more liquor may be consumed, it is notorious that drunkenness has become less general in Great Britain and the United States, as well as in other countries. The decrease in intemperance amongst the upper and middle classes during the last half century has been very marked, and there is reason to believe that this improvement is extending to the poorer classes.

An eminent neurologist, Professor Erb of Heidelberg, has repeatedly stated his opinion that there is an increase in nervousness, and that it has been gaining steadily during a quarter of a century. It is shown by greater sensitiveness, restlessness, a tendency to be exhausted, a want of endurance, and a deficient power of recovery. This lament is echoed by the philosophers of the pessimistic school. As Nietzsche puts it: "Modern Europe is ill at ease; everywhere appear the symptoms of undeniable decadence. Europe becomes uglier and uglier; she is being transformed into a vast lazaretto where swarms without much pain, but with little joy, an uninteresting crowd of men equal in mediocrity and feebleness, leading a dismal, hopeless, and aimless life." Nordau, the author of a popular work on *Degeneration*, has laid much stress upon the great decline of taste in literature, and the preference shown for the abnormal, indelicate, and immoral in fiction. Such a question is worthy of con-

sideration, for it is likely that any morbid proclivity, any perversion of tastes and morals, would show itself in the current literature of the day. To treat adequately of this subject would require much space, and I shall therefore content myself with observing, in this connection, that, as far as my own readings in popular literature go, there does seem to be a great falling off in good taste. The circulation of a popular book seems to be generally the sign of its worthlessness rather than of its worth, and some of the authors who have gained the widest circulation have gained it by writing down to the lowest feelings of their readers. It is in romance and the drama that we see the general debasement of the ideal, the craving for impure suggestions, the renunciation of duties, and a sickly egotism disguised by as sickly a sentiment.

The question whether the totality of the less dangerous kinds of nervous disorders is increasing, can not be decided by the rough test of statistics, for two reasons: the new trials of life have fallen mainly upon the middle classes, and have scarcely come to affect unfavorably the most numerous class in the community; and there are serious maladies which make life miserable that are in no wise indicated by the registers of mortality. I have tried by queries addressed to physicians of experience and reputation to obtain their opinion on this question, and have to thank many of them for thoughtful replies. Some have pointed out the difficulties of forming an opinion. A man successful in medical practice generally begins amongst one class of patients and ends amongst another class, or becomes a consultant. Those whose recollections are likely to be the most helpful are doctors who have continued practising for many years in the country or in small towns. None of these gentlemen has noticed any increase in the number of nervous diseases, or any change in the type. Some eminent physicians connected with hospitals and practising in large towns, have declared their opinion that there is no increase in the number of patients suffering from nervous diseases, though

new types of such diseases have been differentiated, described, and named. Dr. McAlldowie of Stoke-on-Trent has kept a record of every case he treats in private practice or in hospital; but he can not find that diseases which were well recognized twenty years ago; e.g. epilepsy, chorea, locomotor ataxia, are more frequent now than then.

On the other hand, some well known physicians of mature experience have, in various stages of opinion, declared their surmise, belief, or conviction, that there is a real increase in the frequency of nervous diseases. These are men who have had to deal with the classes and places in which such an increase might be looked for. The rise is specially marked in neurasthenia, and such lighter functional disorders which did not plague men so often in the old times. Dr. James has kindly looked up the ward-journals of Professor Sanders in the Edinburgh Infirmary from 1869 to 1878, to compare with his own journals from 1892 to 1899. In the former there were one hundred and forty-four cases of nervous diseases out of a total of fifteen hundred and nineteen male cases; in the latter there were one hundred and fifty-five cases of nervous disease out of a total of eight hundred and five male patients. It will be difficult to explain this increased proportion without assuming that nervous diseases have become more frequent in Edinburgh and the vicinity. When we come to the graver forms which show in the register of mortality, we find both in England and Scotland a decided increase in diseases of the nervous system, as well as in diabetes and the chronic renal diseases, which are believed to be often caused by mental trials and worries. There is a high death-rate from nervous diseases amongst barristers and doctors. Such maladies become commoner with men as age advances.

Dr. Strahan¹ calls attention to the fact, "that while the

(1) *Suicide and Insanity*, by S. A. K. Strahan, M. D. London, 1893. p. 189.

general death-rate for England and Wales has fallen 16.4 per cent during the past quarter of a century, a rise, in some cases amounting to over one hundred per cent, has taken place in the death-rates from hereditary and degenerate diseases." He shows by a table of the death-rates from various diseases in England and Wales between 1866 and 1890, that during these twenty-five years there has been an increase of 10.2 per cent in nervous diseases; 65.9 per cent in heart diseases; 63.4 in kidney diseases; 103.1 in diabetes; and 24.2 per cent in suicides.

Deaths from nervous diseases are much less common in Scotland than in England; but the same increase is to be found in the Northern land. The statistics are interesting and instructive.

In 1855 the proportion of deaths for every hundred thousand of the living population of Scotland who died from diseases of the brain and nervous system, was one hundred and sixty-eight; from diseases of organs of the circulation seventy-eight, and from diseases of the urinary organs twenty-four, and from phthisis two hundred and sixty-one. The average proportion of deaths of ten years, from 1855 to 1864, was for nervous diseases one hundred and seventy; for diseases of the circulation it was eighty-four; for diseases of the urinary organs twenty-six; and for phthisis two hundred and fifty-nine. In 1897 the proportional death-rate had progressively risen to two hundred and twenty-one for the nervous system; for the circulatory one hundred and seventy; for the urinary forty-nine; and for phthisis one hundred and seventy-two, while the general death-rate has fallen from 20.6 in the thousand in 1855, to 18.7 in 1897.

The proportion of deaths from diseases of the nervous system amongst every ten thousand persons from specified causes was in 1855, eight hundred and eighteen; for diseases of the circulation three hundred and fifty-six; for urinary diseases one hundred and twenty; and for phthisis twelve hundred and sixty-six. In 1897 these had amounted to, for nervous diseases eleven hundred and seventy-nine; for circulatory nine hundred and ten; for urinary

two hundred and sixty-three; for phthisis the proportion of deaths had fallen to nine hundred and seventeen. In Scotland the death-rate from these nervous diseases, and from diseases under the more direct influence of the nervous system was greater in the towns than in the mainland-rural districts, and it was greater amongst men than amongst women.

Epilepsy frequently appears in neurotic families. Brown-Sequard proved that guinea pigs rendered epileptic by artificial irritation, may produce descendants, some of which are also subject to the same disease through several generations. This experiment is naturally made much of by those who oppose Weismann's thesis that acquired characters are not transmitted by generation. Pelman estimates that there are fifteen epileptics to every ten thousand of the population. Unhappily, medicine has little power over this grievous malady, which, when established, generally follows the subject through life, causing a great variety of symptoms, mentally and bodily. Many idiots take epileptic fits, and from twenty to twenty-five per cent of ordinary patients afflicted with epilepsy become insane. Other epileptics are often eccentric, queer, and irritable. Perhaps forty per cent may be regarded as not mentally affected. The alarm and distrust which the recurrence of the attacks arouses generally, in the end, throw chronic epileptics out of employment. Thus the privations of poverty, and the tedium of enforced idleness often increase their wretchedness.

Lombroso classes the habitual criminal among the hereditary degenerates, holding that he belongs to a degraded type of humanity. He assigns as characteristics, smallness of the head, asymmetry, or abnormal forms of the skull, prominence of the superciliary regions, unequal size of the orbits, teeth irregularly placed, abnormal forms of the palate, increased size of the lower jaw, and a variety of irregularities in the shape and position of the external ear. These *stigmata* indicate deeper abnormalities of structure. Professor Benedikt has demonstrated atypic convolu-

tions and sulci in the brain of executed criminals, which, had they not been hidden during life under the opaque vault of the skull, would have helped the learned professor in saving the culprits from being treated as responsible for their actions by ignorant judges. Lombroso admits that the habitual criminal is not distinguished by any unvarying characteristics, such as a naturalist would make use of in describing the species or genus of a plant or animal. He acknowledges that his type fails in sixty per cent of his criminals, and in some cases individuals of unblemished character have most of the peculiarities assigned to malefactors. The idea of a criminal type has found little favor with English and German anthropologists. Against Lombroso and Manouvrier may be quoted the opinion of Topinard and Heger, that the skulls of criminals do not differ from other skulls, and Giacomini has refused to recognize a special type in the brains of criminals.

However, there are some peculiarities commoner to habitual delinquents than to other persons, and these have been carefully studied and described by Lombroso and his school. The criminal is generally ugly and ill-made, and, as a rule, below par in height and weight. He has a physiognomy readily recognized by those who frequent jails. Much of this is acquired, as for example, the lines which a bad life and a vile education trace on the countenance. The incorrigible rogue is not a sample of atavism, the revival of the traits of the primitive savage, but a degraded product of our complex civilization. In the body politic he corresponds to the parasitical animal that lives solely upon the host it inhabits. The prime deficiency in criminals is a want of mental power and an inability to resist temptation. This renders them unfit to earn their livelihood in the competition of honest industry. They made a swift end of him with the halter or axe in the good and rude old times. Now-a-days when we catch hold of him, we feed him and keep him in health for a little

while, and at the end of his sentence let him out again to prey upon society and propagate his kind.

We have more precise information as to the prevalence of suicide, deafness, idiocy, and insanity. The number of suicides is increasing in all the civilized countries from which we have statistics, save perhaps in Norway. This increase has been estimated to amount to fifty thousand a year. The main causes of this formidable rise appear to me to be¹ a more severe strain upon the nervous system, a greater sensitiveness, with a diminished power of resistance, owing mainly to a change in religious beliefs.

It seems uncertain whether deaf-mutism be increasing or not. Its frequency varies so greatly in different countries of Europe that it has been classified as endemic and sporadic. There is no doubt that born deafness is often propagated by heredity. In the census of 1891 there was a remarkable fall in the number of congenital deaf-mutes in Ireland, from thirty-one hundred and sixty-three in 1881, to twenty-five hundred and seventy. But Irish statistics are looked upon with suspicion², owing to the returns giving a proportion of congenital to acquired cases of deaf-mutism much larger than that in any other country. Owing to the lessened virulence in the type of scarlet fever, we may expect a diminution in the number of cases of acquired deafness.

The only thing worth having in a man is his intellect. An ape much surpasses him in strength and agility; an eagle in sight; a dog in smell and hearing; a bat in touch; a pig in powers of digestion and assimilation; but through his finely developed brain man is the master of them all. The idiot wants man's special gifts; even his instincts are feeble. Through human eyes

(1) See my paper on the *Causes of the Increase of Suicide*, in *Journal of Mental Science* for July, 1890.

(2) See *Deaf-Mutism*, by Holger Mygind, M. D. Copenhagen. London, 1894. p. 14.

he looks at the world which he does not understand, and he is unable to direct the complex muscular apparatus of the human body; he has a brain poor in structure, or deficient in quantity, often a defective nervous system, and a weak heart. In born idiots there are often outward deformities indicating an unfinished organism, such as a high or a saddle-shaped palate, irregular teeth, or misshapen ears.

In the higher grades of idiocy the subjects, called imbeciles, are better made and have more intelligence, but are useless for the world's work.

The idiot is the outcome of a neurotic tendency in the parents, or of constitutional weakness, perhaps the result of intoxication at conception, or of accident or disease during pregnancy. Of all born infirmities idiocy is the one most frequently propagated by inheritance, or, it might be said, by disinheritance, for divers idiots are often liker one another than their own parents. They die away without descendants; but in neurotic families the strain is liable to follow the healthy members and appear in the children or grandchildren.

In some countries idiots are as numerous as lunatics, or even more so; perhaps one to every five hundred of the population might be ventured as a rough estimate among most civilized nations.

Whether the number of idiots be augmenting or not is a doubtful question¹.

Cretinism is a form of idiocy endemic in valleys in the Alps, Andes, and parts of the Himalayas, and in some districts watered by the rivers flowing therefrom. It is now known to depend upon degeneration or disease of the thyroid gland, generally causing a swelling, or goitre. It was known to the Romans, and is still very prevalent in Switzerland and Savoy. Owing to increased care and hygiene, cretinism has wholly disappeared in some places,

(1) The statistics of idiocy are given in my book on *The Mental Affections of Children*. London, 1898.

and in others the number of cretins is much reduced. With the progress of enlightenment and a closer study of the conditions under which the infection takes place, we may expect this degeneration to become rare.

In the case of PERSONS AFFECTED WITH PROGRESSIVE DEGENERATION TRANSMITTED FROM THEIR ANCESTORS, we may have the blight presenting itself early, in the completed form of idiocy, or so affecting the faculties and intellect that the heirs of the neurotic tendency may have some form of neurasthenia or dipsomania, or they may become the victims of insane ideas which lead up to melancholia, delusion, hallucination, and other extravagancies of the passions or reasoning faculties. Some persons from early years are strange and capricious in their conduct, prone to give way to suspicions, or to ideas of grandeur, or subject to fits of melancholy. In the course of years these symptoms slowly take the upper hand; the suspicions become more frequent or obstinate, delusions and hallucinations follow, and the unfortunate victim passes into the condition of paranoia. These degenerates not infrequently bear the physical marks, the *stigmata*, of an evil heredity, such as deformations of the jaw and base of the skull.

In spite of the fact that the Commissioners in Lunacy¹ for England and for Scotland and the Inspectors of Lunacy in Ireland have done their best to screen the figures given in their annual reports, and in spite, too, of their elaborate arguments to prove

(1) Facts will assert themselves, and in England there is now a general revolt amongst the best informed against the arguments of the Lunacy Commissioners. Here is an extract from an article in the *Times* on the last report of the English Commissioners: "They again tell us that there is an increase in the number of registered lunatics of no fewer than thirty-one hundred and fourteen,—the largest annual increase which the Commissioners have ever had to record. Moreover, there has been for many years an uninterrupted increase of the officially known insane population. In 1859 there was one 'official' lunatic to every five hundred and thirty-six persons. Ten years later the proportion was one to four hundred and eighteen. In

that insanity is not increasing in the United Kingdom, there is not the slightest doubt that in England, Scotland, and Ireland, there is a serious augmentation of the numbers of the insane.

But when due allowance is made for causes, often adverted to by the commissioners, which go to swell their figures, it would seem as if there was a real increase in the insane population. The census returns for Scotland showed in 1871 one insane person for every four hundred and ninety-four of the population; in 1881 one insane for every four hundred and forty-six; and in 1891 one insane for every three hundred and eighty-five.

While the increase of insanity in Great Britain is beyond reasonable doubt, it appears from the last census of the United States that not only has the previous increase stopped; but there is a slight decrease in the ascertained number of the insane. The total number of lunatics to the million of inhabitants in 1860 was seven hundred and sixty-five; in 1870 nine hundred and seventy-one; in 1880 eighteen hundred and thirty-three; and by the census of 1890 it was sixteen hundred and ninety-seven. The Americans are believed to be especially prone to nervous disorders, but this holds mainly with neurasthenia and other functional forms, which do not often end in insanity. The census also shows a decrease in idiocy and deaf-mutism in the United States. It is well to remember, however, that in North America both crime and insanity are largely imported.

Medical philosophers have grouped the epileptics, the habitual

1889 there was one 'official' lunatic to every three hundred and thirty-seven persons. In 1893 the ratio had risen to one in three hundred and eight. At the beginning of this year it was one in three hundred and two. For the last ten years there has been an annual increase of over two thousand. The general report of the Census Commissioners shows that the number of lunatics in Ireland returned in 1891 was nearly treble the number in 1851, and that the increase between 1881 and 1891 was from nine thousand seven hundred and seventy-four to fourteen thousand nine hundred and forty-five, while there was a decrease of 9.1 per cent in the general population."

criminals, the suicides, the deaf-mutes, the idiots, and the lunatics, into the great family of the neurotic, or neuropathic. In some cases these affections appear to be hereditary, in others to be acquired during the life of the individual. In the former category they are the culmination of a process which has gone on for generations, converging peculiarities meeting in the parents, so that in the offspring one part or other of the nervous system is weak, excitable, or diseased, or the brain is so affected that the guiding or restraining power of the intellect is enfeebled or lost. In most cases the morbid affection of the child does not take the same form as that of the parent. Epileptics may have children who are not epileptic, but weak-minded, or who become insane, or the prey to melancholy or suicide in after life. This is called dissimilar or heteromorphic heredity, in contradistinction to similar, or homomorphic, heredity, in which the affection of the child seems to be the simple continuation of that of the parent.

Then we have cases in which the ancestors seemed sound, but insanity is evolved during the life of the individual. The man has no unhealthy forefathers; but during his own life the morbid influences have so accumulated that he becomes the prey of some form of insanity. On the other hand, we see some people tried with every variety of grief, pain, and disaster, which afflict and sadden them for the time; but their mind always rights itself. In the one case we have a nervous system prone through hereditary predisposition to yield to lowering influences; in the other we see the reactive power of a healthy mind working in a healthy body. A man descended from healthy ancestors without any tendency to nervous diseases is better born than all the kings and princes of Europe. Any one who looks up Lorenz's "*Handbuch der europäischen Staatengeschichte*" will easily see how closely all the princely families of Europe are connected together by descent and intermarriage. I can claim the priority of having used the history of royal and noble families to throw light upon the problem of morbid heredity. No more foolish law was ever passed by the

British legislature than The Royal Marriages Act of 1772, making the descendants of George II. incapable of contracting marriage without the consent of the king and his successors, signified under the great seal. This was designed to prevent the Guelphs from contracting legal marriages with subjects.

It was said at the time that its title should be an Act for encouraging fornication and adultery in the descendants of George II. It might also have been styled an Act for increasing and intensifying hereditary insanity in the said royal family.

Throwing aside these special degenerations, we may be asked: is the general tendency downwards or upwards? Professor Lankester in his "Degeneration, a Chapter in Darwinism," says, "We are as likely to degenerate as to progress," yet he regards it as hopeful that we now know more of the cause of weak health and disease. But the knowledge of the causes of things does not always give us the power of preventing them. The old Romans saw and deplored the causes of decline in their empire, but were powerless to arrest them. We are going through a critical time, and some dangers look ominous for the future of the race. Two of these may be briefly mentioned.

One is the OVERPRESSURE upon young people connected with school tasks and examinations, qualifying and competitive. This seems every day to spread wider and to invade all the ranks of life. In Britain, after much exertion, we have succeeded in gaining some relief from the inspector of schools, and his ill-drawn-up codes for the younger children; but the worst strain falls upon the middle and upper classes. Surely it is a mistake to make the drilling and preparation for the battle of life more hurtful than the actual warfare itself. The toil, vexation, and disappointment connected with examinations pervade almost all branches of knowledge, and are getting more grievous every year. This evil has already inflicted enduring injury on men of the studious class, and is likely still to go on helping to increase the tendency to exhaustion and irritability of the nervous system, and to dis-

gust men with learning. Though there is a great deal of discontent, and many protests have come from thoughtful men all over Europe, it looks as if things will need to get worse before they can get better. Our studious youth are lavish of mind labor, and the number of rejections in examinations is often paraded as a proof of the value of the degree. Though as physicians we are often called upon to prescribe for the evils of overwork in preparing for examinations, the examinations for degrees in medicine are often the most senseless and difficult of all. To put things on a more sensible footing, examinations would need to be taken out of the hands of the teaching class altogether. Each professor has a rooted conviction that his own speciality is of surpassing importance. Their interest, their self importance, even their conscientiousness, all drive one way, to make them hold up what they call a high standard.

The principal evils to health from overstudy, besides injured growth among young people, appear to be kidney diseases and neurasthenia. Young women who sometimes study with too great diligence are liable to suffer from chlorosis and neuralgia; and governesses, struggling upwards from the poorer walks of life, are often observed in asylums.

On the other hand, it must be remembered in this connection that young people take more to athletics than they used to do. In running, jumping, skating, swimming, and rowing, there is no record which has not been beaten within the last fifteen years. Girls in their teens take more exercise than their mothers or grandmothers did, and this will help to make them more robust in future years.

The second is a more far reaching danger. There are so many inducements now-a-days for women to withdraw from their natural duties, that Solomon's description of a bad woman may pass as the type of a good one: She is loud and stubborn and abideth not in her house. The movement is looked on with favor by some men out of thoughtless good nature, and pushed on by

others from a half sensuous desire of pleasing and idolizing women. Unhappily, movements once begun can never be stopped at the point first designed; and nothing is more difficult than to show distant dangers to those who do not wish to see them. It is sometimes said that no harm has resulted from the greater range assumed by some women in the society of the day. For my part, I never expected the evil consequences to show themselves at once, but they are coming fast enough. We are told that there is no fear of women giving up natural duties. Why, almost all the women of the bourgeois class in France have given up nursing their children, when they have consented to bear them at all! In France and in Massachusetts the birth-rate is scarcely higher than the death-rate. In Massachusetts the mothers of foreign birth have twice as many children as the native mothers. While France is alarmed at her sterility, Massachusetts contentedly recruits her population from French Canada, where old world notions still prevail. In England the birth-rate has also diminished, and Malthusian devices are becoming known. Moreover, miscarriages have become more frequent, and the death-rates from congenital defects have steadily risen. This is mainly owing to the increased employment of young women in out of doors occupations.

The withdrawal of the mother from her natural duties is also the cause of neglect of the children, especially in infancy. This is indicated by the very high mortality of infants in the West Riding of Yorkshire, and, in fact, wherever the married women go out of doors to work. The evils following upon the artificial feeding of infants have been powerfully stated by Dr. James Cantlie¹. Farinaceous and chemical preparations advertised to imitate mother's milk, and the Indian rubber sucking bottle now replace the nursing mother. "Pleasure in one phase of society and self-imposed forms of labor in the other have deprived the infant of

(1) See *British Medical Journal*, Sept. 2, 1899.

its natural food. The natural calling of both classes is being sapped by the shadowy myth of female rights and independence, and the future is being sacrificed to pure selfishness." This artificial feeding in a great measure explains the deplorable condition of the teeth in most young people, a condition which seems ever to be getting worse. Woe to the states which suffer such doctrines as these to which we have referred to gain hold in their midst ; in the end their place will be taken from them and given to peoples who obey the voice of nature and recognize the right order of things !



JOHN RUSKIN, AS ECONOMIST

PATRICK GEDDES, *Edinburgh.*



HE surprise, perplexity, and sometimes indeed exasperation with which so many of even the more sympathetic of Ruskin's earlier readers and critics received his later works must be frankly admitted. For here seemed an unreasonable and violent change of career: a veteran art teacher, critic, and man of letters suddenly casting aside his hard-won laurels, dashing off into apparently the most remote of all possible fields, that of political economy, excitedly challenging its sober cultivators, proclaiming their patiently-gathered harvest mere tares and darnel, hurling blazing pamphlets into the granaries of their science, and charging with impetuosity against its massive logic mills. What, common-sense people ask, is to be learned from a man who has spoken so contemptuously of all the highest practical achievements of the nineteenth century? For him is not its science either of mere mechanism or of evolutionary nonsense?—its chemistry and biology mere curiosity about smells and bones?—its splendid development of modern commerce and finance little better than complex thieving?—the steam engine a nuisance, never to set wheel on St. George's lands?—our vast and prosperous industrial cities so many working models of hell?—while even our hard-

won system of education with its clear, practical aims must make way for schools with a curriculum of Latin, and botany, and the history of Florence! Here, surely, we have a clue to the right critical estimate. Our would-be economist must be but an artist born out of his proper mediæval time; his mournful jeremiads, with their wailing retrospects of the good old times, and their bitterly pessimist prophecies, out-Carlyling Carlyle, are perhaps natural for him, but clearly useless for us; so let us either take what amuses us in the art books, say the scenery in "Modern Painters," to which considerable merit of style is undeniable, or if we find even that as well done in novels now-a-days, let him alone altogether.

Such is, probably, a fair statement of the opinions to which a very large number of the reading public have steadily settled down; a minority, however, still dissent more or less completely from this estimate, and appeal for a new reading, apparently in confident hope of ultimately obtaining a less unfavorable judgment. Deceived though the latter class may seem by mere rhetorical finish and sentimental glow, we cannot, in the interest of fair play, refuse to give them a new hearing, or briefly to reëxamine for ourselves the economic position of Ruskin, and that of the orthodox English economist of his own time, who was the more especial object of his attacks. Before considering Ruskin as an economist, we must obtain some basis of comparison and ascertain something of his contemporaries, whom we may take as fairly represented, not simply or indeed even mainly by John Stuart Mill, but in the domain of practical life by statesmen like Robert Lowe (Lord Sherbrooke), John Bright, or the Duke of Argyll; or again, by the majority of the professoriate, among whom we may recall such distinguished names as Stanley Jevons, Bonamy Price, Hodgson, Fawcett, or Leone Levi. Obviously, however, we must approach both parties as disciples of neither, but from some fresh point of view at once independent and generally accepted. Let us postulate only those conceptions of

positive science, those doctrines of energy and of evolution, which are now reacting so deeply upon the social sciences. And as about such doctrines Ruskin knew little, and cared even less, this mode of approach is assuredly not one prejudiced in his favor.

Without going over all the stages by which the place of economics among the sciences has been defined, the reader may be reminded that logic and mathematics, dealing with the abstract relations of quality and quantity, underlie and precede the physical, natural, and social sciences; that of these physics and chemistry are antecedent to the strictly biological group, while the social sciences, having for their subject the phenomena presented by those organisms, which, like bees and ants, beavers and men, live in communities, are obviously founded upon the whole preceding mass of knowledge, the preliminary sciences. In other words, the successful treatment of the social science requires not merely a discipline in mathematics, as some still suppose, still less mere training in academic metaphysic and dialectic—which is all that so many have brought to the task—but some knowledge of living beings and of the physical laws to which they are subject.

While the details of this classification of the sciences may be the subject of dispute, happily of no consequence here, it is accepted for all essential practical purposes, alike in the organization of learned societies and in the scientific curriculum of universities, that is to say, in the actual teaching and learning of the world. Now the difficulty in fully recognizing our economists as scientific lies in the existence, during the past generation, if not indeed during the entire century, of the most complete state of war between the economists on the one hand, and the cultivators of the preliminary sciences on the other. This is evidenced not merely by the still almost complete suspension of relations between the two camps, or by the fact that only here and there a scientific society accepts economic communications, but also by the frequent occurrence of positive battle. A convenient instance of this is afforded by the history of what is after all one of the most

representative of scientific parliaments—the British Association. This body has long divided its labors broadly in accordance with the classification of the sciences above referred to into sections, respectively entitled—(A) mathematics and physics; (B) chemistry; (C) geology; (D) biology (including anthropology); (E) economics and statistics, together with (F) geography, and (G) mechanical science; the former being separated from geology for convenience sake, and the latter being exclusively concerned with the practical applications of science.

The scientific sections of the British Association have naturally been less sternly scientific than the respective special societies, while the economic section, on the other hand, has borne a more serious and thorough character than that of its kindred bodies. Yet so little have these students of the preliminary sciences respected the discussions of their economic brethren, that their dissatisfaction culminated, in 1876, in an active attempt to excommunicate the latter, and to cut off the Economic Section, root and branch. To avert an expulsion, which would have so grievously discredited political economy in the public eye, the section sought an apologist, and wisely selected Mr. Ingram of Dublin as its president for 1878. Mr. Ingram delivered a masterly address, which, in Mr. Grant Duff's retrospect, at the jubilee meeting of the Association in 1881, is rightly described as "the most elaborate and brilliant to which the section had ever listened." In this essay, soon widely circulated throughout Europe, "On the Present Position and Prospects of Political Economy," although appointed to bless his economic brethren, he well-nigh cursed them altogether, at once pleading guilty for them to all the accusations of their scientific assailants, and delivering a destructive criticism of the past and present of British economics—a criticism exceeding anything of that kind ever attempted by Mr. Ruskin, as much in completeness as in calm. By as ably vindicating, however, the claims of sociology to its supreme place among the sciences, as by proposing complete reforms, the attack upon the Economic

Section was averted, and it was allowed to remain yet awhile in hope of better fruit, which, to do it justice, has since not altogether failed. Finally, three years later, at the jubilee above referred to, Mr. Grant Duff, from the presidential chair, repeated, extended, and enforced, all the criticisms and proposals of Ingram, without a word of protest or even deprecation. If, then, we can ascertain precisely what the defects of our orthodox economists, as thus exposed and admitted in their own camp, really are, we shall be able to examine not only Ruskin's heresies, but other cases of dissent, from a new point of view, and by clearer light.

Political economy has often been popularly nicknamed "the dismal science," but nothing could really be more striking than the cheerful optimism of our orthodox economists, who often gave, as Cairnes puts it, "a handsome ratification of the existing state of society as approximately perfect." For is it not determined by "immutable law"? and has not Adam Smith established the harmony of a community under "enlightened self-interest"? What could be more modern and scientific than this conception of harmonious law? Yet not so; critics have shown how the "Wealth of Nations" is no pure economic treatise, but is subtly permeated, though the matter-of-fact reader may not notice it, with all the philosophy of its author's day. This beautiful harmony of interests, in short, has little in common with our grim modern doctrine of the struggle for existence; it is congruent with the early teleological view which Darwin has expelled from biology; it is the modern survival of Leibnitz's "Pre-established Harmony," and the exponent of this as the "best of all possible worlds" turns out to be the Dr. Pangloss, of "Candide." But that worthy theologian has suffered so sorely at the hands of all his critics that he dares only venture to assert "this is the best of all possible worlds" from the economic rostrum.

This certainly is not encouraging, but we must not let a trifling criticism of this sort prejudice us against our economists; we shall surely find them sound and scientific in the main points of their

science. What, then, is its fundamental conception? "Utility," answers Mr. Jevons; "wealth," says Mr. Mill; and these two definitions come to the same thing, for wealth consists of "utilities fixed and embodied in permanent objects." What surely can seem more practical and more scientific than this conception of utility? What trace of obsolete philosophy can linger here? Alas! strange as it may seem, the whole spirit of mediæval metaphysics. This utility, this central idea of the economic "science," has nothing to do with science; and, whether in the hands of Bentham or Mill, Jevons or Sherbrooke, it matters not, is essentially a figment of antique scholasticism.

The conception of utility corresponds exactly to that of vitality in biology; just as wealth is utility fixed or embodied in permanent objects, so of course organisms were long defined as vitalities fixed and embodied in permanent objects. But the biologist without any more doubting that organisms are alive than that wealth is useful has long utterly scorned, and, what is better, utterly abandoned the attempt to make his science the study of vitality. While his great-grandfather, the last century physician, began with definitions of vitality, and talked much of animal spirits, of humors and the like, he observes each organism in its past and present relations in actual space and time, analyses its structures and inquires how they work, generalizes his observations, and then is done. The old apothecary, too, explained that opium made one sleep in virtue of its inherent dormitiveness (*"virtus dormitiva"*), but, thanks to Molière, the profession has since learned that the fixture and embodiment of an entity called dormitiveness into the permanent object opium does not explain anything, much less form the basis of a science of therapeutics.

So, too, the physicist, when he observes that water only rises thirty-two feet in his pump, no longer appeals to the "natural law" by which "nature abhors a vacuum"; he no longer explains the regular movements of a watch by reference to its "horology" or of a jack by help of "an inherent meat-roasting principle."

The physicist and naturalist may well be surprised to learn that the dormitiveness of opium and the horology of clocks, so far from having wholly disappeared from modern thought into the history of its emancipation, have actually been generalized into a new entity—"utility," and thus have come to form the subject of an inquiry, which its cultivators, indeed, have described as a "hypothetical" or as an "abstract science," but which explains and in great measure justifies Ruskin's addition of the prefix "pseudo—," or the affix "falsely so called," for its more accurate definition.

If space allowed, it would be easy to show how this vicious tendency to invent abstractions instead of working out generalizations has run through the whole subject. The quantity of anything which happens to be demanded, and the supply which happens to be forthcoming, at a given place and time, are legitimate and profitable objects for statistical and historical research. These, the two real aspects of the subject, however, have been till of late too generally neglected, and by the simpler process of spelling with capitals, "Supply and Demand" became raised into the mysterious regulators of society by means of "inexorable laws," and were thus, since things which are equal to the same thing are equal to one another, practically identical with the "Fate," "Kismet," and "Providence" of Pagan, Mohammedan, and Christian philosophers. Nor is the logic less quaintly interesting than the metaphysic. The endless initial squabbles about definitions, the old disputes whether the inductive or deductive method alone is to be used, as reasonable as if naturalists were to quarrel at the outset of their studies whether eyes were to be bandaged or hands to be tied, might all detain us. One favorite practice we may conveniently describe as "generalization of the incongruous." The absurdity of the jumbling of material things A B C, with immaterial things $x y z$,—intentional in such well-known lines as "Brimful of wrath and cabbage," "They sought it with forks and hope,"—has been long concealed alike from author and readers, by first uniting them under some vague

general term of common language, such as "Capital," and then subjecting this to an elaborate analysis, setting up a new series of abstract entities L M N, such as fixed capital, circulating capital, and what not, in which the original realities are all hopelessly confused; finally treating this by an apparatus of metaphor, which, because far more elaborate and recondite—but, it must be confessed, considerably less imaginative—than that of poetry, acquired a deceptive resemblance to scientific comparison in sober prose. The quaint and comparatively intelligible phrases of the newspapers, such as "tallow is firm," "pig iron lively," are not taken for anything more than the poetry of 'Change. Professor Fawcett, however, supposed himself to have enunciated a scientific conception, when he explained that "the remuneration of capital is the reward of abstinence." The expression "clotted nonsense" has been thought scarcely admissible in literary criticism, but the definition of capital as "thickly curdled working time," has appeared to some economists profoundly scientific.

If we now enter upon the actual examination of this economic literature, we find our apparently homogeneous science breaking up into innumerable discordant schools. While the legal and literary economists, like those of the school of Ricardo, have imagined that by adroitly spinning and weaving definitions and syllogisms in their logic mills, they manufacture a body of "natural laws" thereafter rigid and universal as those of mathematics, the economist of mathematical turn, like Gabaglio or Jevons, proclaims the potency of the statistical method, or maintains that algebra and the calculus furnish the true means of economic investigation. To such minds, the theory of exchange seems of course fundamental, but the economist of more practical and physical turn devotes himself especially to the study of "material wealth, its production, distribution, and consumption," while both classes long stoutly refused consideration to the nature and wants of the community for and by whom this wealth is produced and consumed. The majority of economists, however, having had their

attention drawn to the rate of reproduction in organic beings by Malthus, become in so far biologists. Yet nothing more effectually demonstrates the extraordinary slenderness of their scientific pretensions than that such physical discussions have gone on heedless of the very existence of the modern doctrine of energy (if indeed they do not involve some contradiction of its fundamental law), or that "competition" and the "laws of population" have been discussed without reference to the fact that Malthus's own clue had led, in the hands of Darwin, to the construction of a vast theory which has revolutionized not only modern biology, and with it our views of the origin of man, but shed brilliant light on all the other sciences which concern him. Theologian and scholar, even poet and romancer, were soon carried far by this tidal wave of thought, strong as that of the Revolution or the Renaissance; the economist alone remained behind. Though in his conceptions of progress, competition, population, and the like, provided with some genuine though fragmentary scientific premonitions of evolution and of the struggle for existence, he long delayed to modernize them by the aid of the new learning—supposing, doubtless, that even these—"progress," "competition," "coöperation," and the like, are sacred metaphysical abstractions too.

When the preliminary sciences were insisted on, our economist was wont to reply with Professor Fawcett, that these do not come within his province, or with Mr. Bonamy Price, that he cannot hope to become a specialist. But if the phenomena of human society are dependent upon biology, as are those of ant or bee society, the orthodox economist must either straightway follow the example of the students of mind and language, whose studies not so long ago seemed equally remote from these humble microscopic inquiries into development, and either adopt and apply the conceptions of modern physics and biology, or disappear in the unavailing struggle for existence against them. Ever since the constitution of sociology upon the preliminary sciences by Comte half a century ago, the result has been certain. Spencer and his school

have continued the siege, and signs of all kinds from both sides that the war is well nigh over are not wanting. On the side of the besieged economists, the more far-sighted leaders, like Mr. Ingram and Mr. Grant Duff, have unconditionally surrendered the citadel, and indeed taken arms on the side of the invaders ; while among the latter, hardly a zoological text-book is now-a-days written without some reference to the social sciences.

Is it attempted to stop the breach by appeal to mental or moral science ? Archaic psychological and ethical conceptions—frequently of course of fundamental importance—are dragged up from the academic crypts, where they have supported the temple of economic orthodoxy ever since Adam Smith founded his provisional and so far valuable doctrine of economic and moral science upon the assumptions of pure egoism and pure altruism respectively. But we can not permanently found economics on the notion of unrestrained self-interest, especially if we practically drop our master's correlative doctrine of morals on a basis of universal sympathy. In such " hypothetical sciences," the hypothetical element is more evident than the scientific ; and these illusory simplifications of the problem by denying the unity of nature and of science need not detain us here, save that they are of interest in accounting for those moving appeals against emotion, and contemptuous dismissals of " sentiment"—themselves examples of emotion and sentiment, if of too strictly egoistic or economic sort—with which every reader of orthodox economic literature is familiar.

Enough, then, has probably been said to show that our economists, even in so far as they have claimed to apply scientific conceptions at all, were provided with curiously archaic and erroneous ones, and that their intellectual apparatus has consisted largely of broken down heirlooms.

Along with this preservation of false conceptions destroyed by science, and ignorance of true conceptions established by science, there has been associated a marked scarcity of scientific observa-

tion and classification of phenomena, and a presence of that confusion of fact and hypothesis, of opinion and anecdote, of controversial trifling, and practical recipes of doubtful efficacy, which one only finds elsewhere in equal abundance in the scientific library of the middle ages. But the reader can easily go on tracing the close analogy between an orthodox "system of political economy" and a mediæval work on natural history, astrology, or alchemy, into its curious details; we have given perhaps too much time to this pursuit of intellectual palæontology. It would appear, then, that Ruskin (however he has come by it), has really had some considerable insight into this state of things, but unfortunately denounces it with the heat of an eager reformer instead of appreciating its high scientific interest, and describing it with the minuteness it deserves. For when every year are swarming down these all-devouring hordes of scientific invaders, whom neither spiritual nor temporal resistance can repel, whom neither theologian's robe, nor lawyer's wig, frightens from beginning to meddle with even their special business, and to whom the medical profession has deserted in a body, what was to become of the metaphysicians who have so long had economics in their keeping? What of optimism and pre-established harmony? Providence-Supply-and-Demand will be blasphemed; Utility will go the way of *virtus dormitiva* and *vitality*; the "elementary conceptions of wealth, capital, labor," will be analyzed as ruthlessly as the "elements," fire, air, earth, and water. Every chapter of the hypothetical science will be punctured,—who—who will save us?

But does not the preceding criticism overshoot its aim? Even if economists be unscientific, surely this comparison of political economy to alchemy is undeserved, else why were so many merits granted at the beginning? It would ill become the student of modern science to forget that to Roger Bacon the alchemist, and Kepler the astrologer, even to Paracelsus the charlatan, we owe priceless discoveries; it is only the persistence of alchemy or

astrology as modern systems of doctrine that it would deprecate. So the biological invaders of political economy must never forget that, while of its orthodox system hardly one stone can be left upon another, for new foundations have to be laid, the materials of the edifice are enough to ransom the economists from disgrace or oblivion. Even in the ranks of the preliminary sciences advance is never simultaneous; one subject starts forward while another is lagging far behind; the mineralogist and chemist, the botanist and zoologist can never keep fairly abreast, even the new sociological economists are no whit exempt from the risk of fossilizing like their predecessors.

We saw at the outset how unfavorable a first impression of Ruskin's economic writings one was apt to acquire. The weakness of our orthodox friends, however, may warn us to be cautious in adhering to a prejudice which he naturally incurred by proclaiming, in season and out of season, the hollowness of their pseudo-science; so that whatever may turn out to be the value of the doctrines he offered us, his destructive criticisms, which have so long anticipated any scientific ones, must accordingly on the whole be straightway transferred from the debit to the credit side of his account. Can any similar value be given to his criticisms of society? An explanation on the one side and a reservation on the other, both important, are first needed. Let us then read a complete typical passage, conveniently one dealing with his much discussed views on machinery:—

“What may be the real dignity of mechanical art itself? I can not express the amazed awe, the crushed humility, with which I sometimes watch a locomotive take its breath at a railway station, and think what work there is in its bars and wheels, and what manner of men they must be who dig brown ironstone out of the ground, and forge it into that. What assemblage of accurate and mighty faculties in them, more than fleshly power over melting crag and coiling fire, fettered and finessed at last into the precision of watchmaking; Titanian hammer-strokes beating out of lava these glittering cylinders and timely respondent valves, and fine ribbed rods, which touch each other as a serpent writhes in noiseless gliding, and omnipotence of grasp;

infinitely complex anatomy of active steel, compared with which the skeleton of a living creature would seem, to the careless observer, clumsy and vile. What would the men who thought out this, who beat it out, who touched it with its polished calm of power, who set it to its appointed task, and triumphantly saw it fulfil the task to the utmost of their will, feel or think about this weak hand of mine, timidly leading a little stain of water color which I can not manage, into an imperfect shadow of something else—mere failure in every motion and endless disappointment; what, I repeat, would these iron-dominant genii think of me? and what ought I to think of them?

“But as I reach this point of reverence, the unreasonable thing is sure to give a shriek as of a thousand unanimous vultures, which leaves me shuddering in real physical pain for some half minute following; and assures me, during slow recovery, that a people which can endure such fluting and piping among them is not likely soon to have its modest ear pleased by aught of oaten stop or pastoral song.”

The popular impression that Ruskin abhorred all machinery and recommended its disuse, and that he criticized all the material results and appliances of our modern civilization in a similar spirit, is thus simply mistaken or unfair. For it will not be easy to find any panegyric of machines and their makers, rich though the age is in such literature, to match this, combining, as it does, the scientific appreciation of Babbage's classic “Economy of Machines and Manufactures,” with the artistic appreciation which we find in the Surfaceman's “Songs of the Rail,” and almost anticipating “McAndrew's Hymn.” In the second half of the passage, however, we find the grounds for the needful reservation; we discover that our prose poet of Utilitarianism suffers from acute hyperæsthesia, is a man of nervous organization and fragile health, upon whom those minor blessings of peculiar sights and sounds and smells, which do undoubtedly accompany and flow from our advanced mechanical civilization, produce an effect serious in the extreme—he can not become case-hardened to them like most of us.

Thus then has arisen the popular impression of Ruskin, as like the enraged musician in Hogarth's famous engraving. When we have had our laugh at the enraged musician, may we not stand

quiet for a little to hear him play? All these noisy callings are lawful indeed, yet not perhaps expedient: some of them have disappeared since Hogarth's day, and we call it progress; in any case the musician's outcry is not without its pathos and its truth. What worker in our dull or garish towns, be he of country birth and breeding, or only accustomed to rare glimpses of hill and sea, is so completely acclimatized, so wholly dulled in vision, as never to suffer from the noise and darkness, the filth and grime around him? Surely, too, we must in the same measure feel how this sadness of our own over the eclipse of beauty deepened in this man, whose preëminence in art and literature has been chiefly gained by his expression of that passion for the external aspects of nature, to maddening sorrow.

Whether expressed in language with the nature poets, or in color with the landscape painters, the movement is the same; the same too in science. It is not by hazard that Darwin is countryman and contemporary of Wordsworth and Turner, Lyell of Scott, Asa Gray of Bryant, their differences in product are determined by details of character or circumstances of youth—all naturalism is akin.

Yet this is more than an age of naturalism. The pre-Raphaelites began indeed with exquisite delineation of fern and pool, but one soon passed into sacred art, and another into modern portraiture: in the life and works of the poets we find the same transformation. For Scott the historic drama, for Wordsworth the problems of individual life, for Byron or Victor Hugo political aspirations, more and more superseded the enthusiasm for nature with which all alike began in youth. The scientists have undergone a parallel evolution. Darwin's "Naturalist's Voyage" in youth, his "Origin of Species" in middle life, and his "Descent of Man" in later years, mark the stages of a similar development in which his contemporaries, Lyell and Virchow, Huxley and Hæckel, have each in his own way shared. This, too, explains the passage from natural science to economics, which is the main idea of the pres-

ent essay; it is simply the passage from biology to sociology, proclaimed by Comte and investigated by Spencer; in all cases minds opened and disciplined by contact with this or that aspect of nature are betaking themselves to some kindred aspect of the supreme study of man.

But what ideas can Ruskin offer? Has this man of art and letters any science, any genuine knowledge of fact and nature whereon to build? However much the quiet evangelical London home, and the antique university where he spent his early years, may have prepared him for work in literature and art, it is evident that they did not furnish much training in science; in fact, so far as pure science is concerned, no village naturalist can be more of a self-taught and self-made man than Ruskin was. Even now one may sometimes feel tempted to say to an Oxford graduate of much newer brand: "Thou wast altogether born in sin, and dost thou teach us"? Yet in evidence of some mathematical discipline, we have a text-book of perspective; in geology observant drawings, some research and a destructive criticism of Tyndall's glacier theories; in mineralogy a charming attempt at its popularization; in botany and zoology several books, disappointing indeed, yet with exquisite figures and flashes of observation, keen, loving, and reflective as that of the naturalist of Selborne. So much grasp of facts and of their order in nature, such power of observation and description, with varied knowledge of history and art, constitute more preparation alike in preliminary and social sciences than could be shown by any of the economists whom he was wont to deride.

But to our long-delayed construction. Definitions we shall not devise at starting; of mathematics we need little, for statistics is only a highly-developed counting of fingers. Nor can we assume the old economist's psychology, with its hypothetical, self-interested, purely egoistic "economic man," and his simple wants and desires—all of "wealth." For our economists we know that "there is no such thing as intrinsic value," that "value does not reside in

commodities themselves, and is no more to be found in a loaf of bread than in a diamond, in water, or in air," and so on. Ruskin, on the other hand, claims it as the highest merit of his leading treatise¹ that it "gives at the outset, and maintains as the foundation of all subsequent reasoning, a definition of Intrinsic Value and intrinsic Contrary-of-Value."

How are we to reconcile this flat contradiction? As in the world-old dispute of the gold and silver shield both interpretations are partially true. To say that no value exists in loaf or diamond by itself is to state for particular phenomena the idealistic aspect of phenomena in general; while at the moment of buying and selling, on which the economist used exclusively to fasten his attention, it is a mere commonplace of the market which neither Ruskin nor anybody else can dispute. But the economist, continuing to explain that things have no other value, *i.e.*, that phenomena have no other aspect, merely expressed the indisputable fact that they had no other aspect for him; that the question of what loaf and diamond might mean to physicist and physiologist had not occurred to him. Let us, however, leave both shop and class-room, walk out into the world, look about us, try to express loaf and diamond from the objective side in terms of actual fact, and we shall find that physical and physiological properties or "values" can indeed definitely be assigned. The one is so much fuel, its heat-giving power measurable in calorimeter, or in actual units of work; the other a definite sensory stimulus, varying according to Fechner's law. This is precisely what Ruskin means in such a passage as the following, which, however absurd to the orthodox, is now intelligible enough to us, despite a certain note of overstatement:—

"Intrinsic value is the absolute power of anything to support life. A sheaf of wheat of given quality and weight has in it a measurable power of sustaining the substance of the body; a cubic foot of pure air, a fixed power of sustaining its warmth; and a cluster of flowers of given beauty, a fixed power of enlivening or animating the senses and heart."

(1) *Munera Pulveris*.

It is among the chief claims to honorable memory of the late Stanley Jevons, whose intellectual stature, head and shoulders above most of his contemporaries and survivors, gave him many a glimpse of fact denied to them, that he called attention to the wasting coal supplies of Britain, and demanded their economization, thus gripping the essential fact that our coal is not merely an object of subjective desire and therefore exchange-value, but the fixture and embodiment of a definite quantity of stored energy, within which our modern industrial activities find a stern and calculable limit. The essential question of coal economy—the essential element of the real and intrinsic wealth of nations, lies then not in anywise in the maximizing of the wealth of individual coal masters and coal percentagers as Ricardo would have explained; neither in the increasing of miners' wages, as their class economists would say ; but in the relation of actual supply to existing and future demand ; in detailed criticism of the nature and purposes of such demand ; and in the taking definite action against that waste of nine-tenths or thereby in diffused heat, and still better—diffused soot, amid which the economist of market-place and academe complacently preached "*laissez faire*," and Ruskin the reverse.

Again, since the activities of a community are the sum of the separate activities of its units, and since production exists for and is determined by consumption, political economy is, from the present physical point of view, the generalized aspect of domestic economy. This proposition Ruskin, following Xenophon, has traced into valuable detail, which ordinary writers till the rise of Le Play's school have almost ignored.

But let us work out our physical economics more closely. From the point of view of matter and energy our society is a vast clock being wound up and running down ; the mechanical equivalent of heat holds everywhere ; between machines and the automata who mind them there is no physical difference. The ideal of practice must be expressed not in terms of the process or the automata which take part in it, but in that of the result ; evidently

then it is of maximum production per unit time. Thus our machines and hands, men, women, and children alike, are to be worked to the full: "Wages are what maintain the laborer," says Ricardo, for once no metaphysician, but a physicist—since they are all mechanisms alike, no fuel is to be wasted upon them. To maximize production we need simply "Bastilles for Labor built by Capital," and of course freedom of contract, so that the worker may be free to contract between work there and starvation anywhere else. As well interfere with a man's machinery as between him and the women and children he employs. Factory acts have no justification here, no ground but "sentiment," and so even John Bright, kindly-hearted, but orthodox and logical, must stoutly oppose them. For once then the orthodox economist appears to have science on his side, but let us pass to the consideration not only of the quantity but of the quality of production. What is production for? Even from our present point of view the only possible answer is for consumption, that is for the maintenance of society. Necessities of life, say the economists, "are indefinable." But the maintenance of organisms, like machines, is really under perfectly definable physical conditions; so much fuel or food, *i. e.*, such and such proteids, amyloids, fats, and water: so much non-conducting covering and shelter from climate, and all is done. These requirements vary only with latitude; why, then, as Mr. Mulhall's "Balance-Sheet of the World" tells us, do Russian, Norseman and Scot, living in the same latitude, consume per head per annum in round numbers to the extent of £7, £18, and £30, respectively? Since the Russian succeeds in living, he evidently gets his necessities: the balance then of the wealth of three Russians is at the Scotsman's credit; how is this consumed? In more complex food, in finer raiment, and in costlier dwelling; not in necessities but in plus-necessities, not in the primary function of mere maintenance, but in the secondary, yet far vaster function of nervous stimulus: it is spent in giving every product around us its costly "*æsthetic sub-function.*"

But the reader may object that this is not obvious in the things around us? Certainly not. He will find that even with an art-critic to help him little enough is visible: combining, however, our artistic and our scientific acumen we may detect it in the articles of ordinary city consumption, such as ashlar housefronts with iron railings, furniture and decorations, cookery and dress. Of course it is not denied that their æsthetic element is practically latent, but the requisite three-fourths of useless "productive" toil no less remain.

In short, then, our production, while primarily for maintenance is mainly for *æsthesis*, and the vulgar cry for so-called "utility," and the orthodox contempt and popular indifference to things beautiful, mean either a demand for the gratification of the lower senses in preference to that of the higher, or a mere habitual adherence to routine consumption without any sensory gratification for our trouble after all. Broadcloth and square toes have lost their old impressiveness; the two fold drudgery of producing them and paying for them alone remains.

Even on the most strictly physical hypothesis, though man-days are only as horse-power, the consumption of "plus-necessaries" is three times more important than that of necessities; a penny saved is as good as a penny gained; criticism of æsthetic consumption thus becomes the most needful of all conceivable contributions to production; and it is therefore for the economist to become an art-critic, or, failing him, for the art-critic to supply his place and become an economist. Art-criticism, in short, is a special, indeed a leading, province of the practical economics of production and consumption.

It is true the orthodox economist says this does not come within his province, but we must remember that he can not hope to become a specialist.

This economic character of art-criticism Ruskin has however everywhere clearly appreciated. Not only must a student of the Oxford School of Art first draw facts from nature or facts from

history, copying of South Kensington "ornament" not being allowed, but we are constantly told that the function of art is "either to state a true thing or adorn a serviceable one," and before even attempting so much we must "clean our cities, clothe the poor, organize the idle, paint and fiddle to them afterwards." This surely is not æsthetic twaddle of "art for art's sake," but utilitarianism pure and simple; were the solid Bentham, or the stern and inartistic Carlyle, were any soldier or engineer called to be our professor of fine art, he could not say more. And what practical suggestions? Not disuse of machinery, as newspaper hearsay goes, but, after an emphatic reiteration of Mill's terrible dictum—that "it is doubtful whether the use of machinery has yet lightened the day's toil of a single human being," we have not only proposals for the ordered use of all natural forces, but a veritable Utopia of engineering like that of Lesseps or Da Vinci—"suggestions for the use of machinery on a colossal scale for accomplishing mighty and useful works hitherto unthought of," proposals for the embankment and irrigation of Northern Italy and the like. These may or may not be practicable of course, but in the latter case the exact reverse of the popularly received criticism has to be applied.

But let us see what our rival economists have to offer us from the biological point of view—what they think of the actual population. Is not Ruskin, like a born romanticist, instead of soberly speaking of the economic units as laborers and capitalists, producers and consumers, ever fain to foist mediæval notions of rank and nobleness of blood upon us; instead of recognizing "the equality of all men and the equal productiveness of non-criminal work," is he not for ever quoting Plato or Xenophon to enforce his horror of what he is pleased to call base industry, and especially of those very mechanical and metallurgical crafts whereby we have our wealth? Not only is such work vile and debasing, not only are such Britons no better than perpetual slaves, but that unexampled progress of our modern cities which

we owe to these very industries and their prosecutors, only serves to bring his denunciations to a climax. Their factories, railways, or dwellings are all alike accursed; and the revolt against the nineteenth century culminates in some sardonic exhortation to the folk of Glasgow to "burn their city," or some grim desire to "destroy without rebuilding, the new town of Edinburgh, and the city of New York." To indulgent readers this seems merely hyperæsthetic fuss, to graver and more practical minds it sounds like the scream of a hysterical petroleuse; both alike will gladly turn to the orthodox economist. Of laws of population—of the "iron law of competition" he has much to tell us—and as space presses he must have full credit for it without scrutiny. But this is all. What more has biology to say? This views the community not simply as productive automata with the physicist, but as organisms which have reached ascendancy after a long struggle for existence, through survival of the fittest, and in virtue of a peculiarly high evolution of the brain and nervous system, and of it almost alone. This is "man's place in nature," whether Ruskin like it or no; and his economic positions, like any others, have now to be judged by this evolutionary standard.

First, then, our laborers are not the flying shuttlecocks of a hypothetical and abstract science, but the actual concrete *Homo* of natural and civil history; the economic unit is no longer Plato's, but Darwin's man. Just as the operations of heredity upon man and other organisms are not merely analogous but identical, so also are those of function. Division of labor has specialized the polymorphic castes of the anthill; so the same specialization of function develops the same polymorphic changes among men. Every one is more or less conscious of this; it is never difficult to distinguish a soldier from a joiner, or a ploughman from a weaver, while the physician reaches almost incredible skill in reading the finer results of occupation on bodily structures, normal and pathological alike. Without the slightest postulation

of morals, it is a biological fact, that as "function makes the organ," it also shapes the organism, and modifies it either for evolution or for degeneration; moreover, other things equal, it determines its quantity of health, and limits its length of life. Ploughmen and weavers, joiners or soldiers, then, are incipient castes, as surely as Brahmin and Pariah, queen, worker, and drone are formed ones; and the disadvantages of the division of labor, slowly forced into prominence (as, little to the credit of biologists, they have been) through the sufferings of the many, and the moral enthusiasm of the unscientific few, demand study and classification among the "Variations of Animals and Plants under Domestication." The influences of the ordinary environment probably exceed those of heredity or function in importance. The importance of food and of the quality of the atmosphere is becoming recognized, so also with light; the gardener blanches his celery, the zoölogist stops the development of the tadpole by withdrawing light, the sphygmograph shows how the pulse bounds at every gleam of sunshine, and the physiologist and physician are not hesitating to generalize and apply these results to the development of human life in towns.

It has been assumed by past economists that the "necessities of life" were simply food, shelter, etc., and that these subtler factors of the environment need not be included. This pre-biological ignorance need not be argued with, for the economic problem of the maintenance of men is but one special case of the vast problem of the modification of organism by environment, exactly as the descent of man is a special case of the origin of species.

No definition of production is possible from the physical point of view, since it demands a knowledge of the organism to which production is adapted. Now, however, it is definable as the adaption of the environment to the functions of the organism, every productive action thus tending towards evolution or the reverse. Practical economics thus involves a criticism of production and consumption from the present biological point of view.

But this is to say that practical economics finds its supreme end and aim in the maintenance and evolution of humanity.

Production and occupation, then, are judged, not even by their immediate material result to particular individuals, whether queens or drones of the social hive, but by their aggregate result in better or worse adapted environment. Again, not only must the factors of modification of the organism be observed and discussed, but their modifiability must be discussed and acted upon; thus, in the case when any given environment or function, however apparently productive, is really fraught with disastrous influence to the organism, its modification must be attempted, and, failing that, its abandonment faced.

Is not the reader who admits this view almost entitled to suggest that the writer might be making his elaborate biological analysis on the somewhat simple principle of translating Ruskin into his peculiar dialect of Scientific? At any rate, the general correspondence in principle and detail between biological principles on the one hand, and Ruskin's most "unpractical" teaching on the other, is most remarkable. For every student of organism, function, and environment must agree that man, if he is to remain healthy and become civilized, must not only aim at the highest standard of cerebral as well as non-cerebral excellence, and so at function healthy and delightful, but must take especial heed of his environment; not only at his peril keeping the natural factors of air, water, and light at their purest, but caring only for production of wealth at all, in so far as it shapes the artificial factors, the material apparatus and surroundings of domestic and civic life, into forms more completely serviceable for the ascent of man.

And since the belly and members are dominated by a brain developed and maintained through the constant and varied stimulus of the senses, the practical ideal changes wholly. Our community, where some are so empty and weary, others so idle and full, yet alike degenerating in their dismal cities with their

long, unlovely streets, instead of merely furnishing themes for hymns of progress and occasion for *laissez faire*, shows clear necessity for criticism even more searching, for action more thorough than that of Ruskin. Not only do factory acts and many other "sentimental interferences with competition and freedom of contract" become at once scientific and practical, but our theory of production culminates in the Rehabilitation of Beauty, and our productive action in country and city in the ordering of nature, and the creation and conservation of art.

It is interesting then to note that the shout of "Sentiment *versus* Science," with which Ruskin has been for so many years turned out of court, did after all accurately enough describe the controversy: science and sentiment have assuredly been on opposite sides. In one respect alone the public and the orthodox defendants have been generally mistaken; the inductive logic and statistics, the physics and chemistry, the biology and medicine, psychology and education, were all essentially on the side of Ruskin; while on the other have been too often sheer blindness to the actual facts of human and social life—to organism, function, and environment alike—concealed by illusory abstractions, baseless assumptions, and feeble metaphors stuck together with scholastic logic ("science" only in the metaphysician's sense, well nigh as technical as the pugilist's), and frozen into dismal and repellent form by a theory of moral sentiments which assumed moral temperature at its absolute zero.

Hence, then, our new generation of economists and physiologists, of hygienists and physicians, of art-workmen and architects. They are tame and quiet enough, as a generation bred in such subduing environment of light, atmosphere, and civic magnificence, must needs be; none of that unbecoming energy of outdoor exposition in which prophets of the old dispensation were apt to indulge, is to be expected from them,—yet assuredly teaching and practice essentially the same, towards ideals wholly identical.

For the present state of production is by no means good {

enough. What has any modern industrial city, however stupendous its wealth—on paper—to show save a sorry aggregate of ill-constructed houses, mean or showy without, unhealthy within, and containing little of permanent value; for the rest, dirt and darkness, smoke and sewage everywhere, as if its inhabitants had absolutely framed the ideal of a short life and a dismal one, with which they are dull enough to rest contented. Men are everywhere awaking to see that this is no longer to be endured, and it is a central merit of Ruskin to have not only inaugurated that criticism of production, but much of that practical action for its improvement which has been setting in so hopefully of recent years. Of his impetus to Morris and art-workmen generally it is no longer necessary to speak; but some may not know that the Tenement House Exhibition, now being prepared in New York for Paris, must also go straight back for its impetus to Ruskin's initial investment a generation ago with Miss Octavia Hill.

Again, a demand for commodities is a command of labor; it determines function, and therefore quality of organism. Hence Ruskin's continued insistence upon the primary duty of regulating expenditure with studied reference to its effect upon the mind and body of the laborer, at once seeking the minimum service from the lower occupations, and maximizing that from the higher ones; hence his criticism of "the kinds of work which are severally best accomplished by hand or by machine; together with the effect of machinery in gathering and multiplying population and its effect upon the minds and bodies of such population." Such teaching surely equals in clear biological insight and in social wisdom anything in the entire literature of practical economics; since it clearly indicates the line of evolution towards the future city of healthy and happy artists, surrounded by imperishable treasure, from our modern city of weary and sickly drudges, immersed in germs and dust for their pains.

It would be easy to show, for instance, how "pieces of sentimental nonsense" about "purity of race," or that about "bach-

elors and rosières" in "Time and Tide," attack the problem and almost analyze the conditions of the evolution of society by heredity and sexual selection. But any reader can follow these out for himself, and see how the "sentimental political economy" contained not only the germs of systematic science, but of its noblest applications, and find more and more as he reads that our despised and rejected author, however noteworthy and memorable for theoretic work in art, is yet more so for his practical applications of the knowledge to the art of life.

But let us pass to education. Since with Ruskin education was not primarily literary, but industrial, technical, that is, economic, he long ago began with the Sheffield museum. At the top of a hill, and almost in the country—so that, with such trouble, pulse must quicken and breath freshen and brain awaken before one sees the strange new sights, and after all, only a few objects to compare with the multifarious wealth of the endless cases of a great museum. Merely the teaching by a series of carefully selected types—exactly parallel to the small and compact selections which are now replacing for teaching purposes in every modern scientific school the vast museums which are properly storehouses for reference.

Let the reader make what deduction he pleases for personal idiosyncrasy, for passion and paradox; but let him also take some note of existing facts, and consider whether he would not do well also to place Ruskin's protest—if forceful and stormy, perhaps all the better—against the miserable mixture of pseudo-literary and pseudo-commercial cram, "classical" and "modern," by courtesy or irony, miscalled "education"; that jumbled compromise into which academic fossil and commercial Philistine everywhere settle down for the supposed maintenance of their supposed interests, and the actual stupefaction of their children's lives. But what would he give us instead? Of this twice clerkly lore there would perhaps not be enough? The craft of parsing would indeed be in danger; the names of French departments and the

tables of obsolete weights and measures might come less pat upon the tongue; yet for all we should be immeasurably nearer in method and result to that noble discipline of complete soul in perfected body, which the wise men of all ages have had for their highest ideal, calling it Education.

For two distinct tendencies have long been at work in our modern universities and schools, the one dominant in Ruskin's day, deliberately preferring memory of mere words for observation of facts and reasoning therefrom, and yet more memory of words for that coördination of hand and eye which is supplied by practice in the arts, and substituting verbal test of competitive examination for practical test in life. One is the school of Cram, evolving towards a Chinese, the other the school of Culture, evolving towards a Greek ideal; or, more accurately, towards Tartarean and Olympian ideals respectively.

Now that our orthodox educationists have well nigh gone the way of the orthodox economists; now that schools at once really classical and modern are arising to give that genuine knowledge of nature and of literature which make alike scientist and scholar, that genuine discipline in arts coarse and fine which makes the worker, and that factual grip of history and society which makes the citizen, we are only establishing the essential curriculum which Ruskin dreamed for his St. George's School. Teachers acknowledge their debt to Herbert Spencer's "Education," although its writer established no one individual school; why not also to Ruskin? When their nature-study becomes truly satisfactory to the naturalist, their art-study truly satisfactory to the artist, there will be no fear of this.

To summarize. While on one hand the orthodox political economy affords little residue to scientific criticism, Ruskin furnishes much solid material for the new construction. His destructive criticisms have undoubtedly been of considerable service to many, but it must be remembered that these were mainly necessary because of the popular ignorance of what had been done

in France and Germany. There the defects of the Manchester school had been independently exposed by the historical and the socialistic schools ; while the criticisms of Cliffe Leslie, Ingram, and even Jevons, were producing the same result in England. Ruskin's chief services then were constructive. Exceeding all other economists in clear vision of physical realities, in insight and criticism of the quality of production, he was more than any other writer the legitimate continuator of the Physiocratic school, and the forerunner of its complete re-systematization by the aid of physical and biological science ; while his statement of the aims of practical economics in terms of the quality and significance of human life, his treatment of criticism of art and other aspects of production from the same point of view, and his clear enunciation of the essential unity of economics and morals in opposition to the discord assumed as a deductive artifice, will remain especially and permanently classic.

Of Ruskin's practical influence much might be said, but this can not be measured until the younger generation, whom he has educated to active social sympathy, has brought forth its manifold results of economic research and practical application. Everywhere organic filaments are spinning ; reform in the production of wealth, and economy in its consumption are alike in progress ; more slowly indeed, yet surely, views of its distribution at once more rational and more generous are gaining ground ; the health and culture of the worker, the ennoblement of function, the purification of environment, have at last won recognition as truly practical.

As of old, industry passed from its rude stone age to a finer one, so it is again in our own day. As the paleolithic age and its men gave place before the neolithic, so now the ruder coal age, with its waste not only of implements but of life, is passing into a finer economy—of electricity, of art. We think less of transient things made to sell ; we think more of things made to use and keep. We are rising not only to finer mechanics and

labor-saving, but to finer organics, subtler psychics of laborer-saving. And as with things go corresponding thoughts, so a finer, a more human, theory of economics is also spinning. This great social change is all immature as yet, still more so is its theory; but of those whose criticism did most in dissolving away the lower elements, whose suggestions aided most in creating the newer and nobler ones, perhaps no one will be longer or more honorably remembered than John Ruskin as Economist.



SOME RECENT BALZAC LITERATURE¹

WILLIAM P. TRENT, *University of the South.*



THE concurrence of three rival translations, which reach in sum the total of about one hundred volumes, if exploitation in a New York newspaper to the extent of a whole page of fine print, if magazine articles and essays read at women's clubs can fairly be said to establish for the time being an author's reputation, then Balzac is just now at the zenith of his fame in America. An agent for subscription books recently assured me that next to Kipling the author of the "Comédie humaine" was his "most drawing card." I must confess that M. Brunetière's recent frank acknowledgement of the supremacy of his great compatriot over all, or nearly, all other French authors,—a supremacy not hitherto, as a rule, acknowledged ungrudgingly in France,—weighs more with me than the rivalry of translators or the testimony of book agents, but the popularity in a foreign country of any author a half century after his death is certainly

(1) *The Personal Opinions of Honoré de Balzac.* Translated by Katharine Prescott Wormeley [vol. xxxiii of the Centenary Edition of "The Works of Balzac"] Boston: Little, Brown & Co., 1899. 12mo. pp. xxx, 340.

Honoré de Balzac. In "What is Good English and Other Essays," by Harry Thurston Peck. New York: Dodd, Mead & Co., 1899.

Balzac as He Was. By W. E. Henley. "The Pall Mall Magazine," November, 1899.

Lettres à "L'Étrangère" (1833-1842) [H. de Balzac—"Œuvres Posthumes," I]. Paris: Calmann Lévy, 1899. 8vo. pp. 595.

a fact of importance to the student of literature, and should at least lend the quality of timeliness to this review.

But positing this popularity does not, fortunately, involve the necessity of explaining it. For such an explanation, more or less conscious, the reader may be referred to Taine's well known essay, to a less well known one by Mr. George Moore, and to M. Brunetière's address delivered in the theatre at Tours on May 6, 1899,—the centenary of Balzac's birth. This excellent address, the keynote of which is the phrase "the gift to make living," in which the critic finds the chief source of the novelist's marvelous power, is used by Miss Wormeley as a fitting introduction to her selections from Balzac's miscellaneous works. Some such introduction was probably necessary, at least for readers making their first acquaintance with Balzac through this volume, if, indeed, we can imagine persons so unfortunate. After some years of study, I am by no means sure of the best methods of approach to that large and attractive region in the world of the imagination known as the "Comédie humaine," but I am quite sure that I should not advise any one to learn to know Balzac through his miscellaneous writings or through his letters, interesting though these are to the student. Yet when one does know the novels, in whole or in part, some knowledge of the novelist's opinions about men and events and things becomes interesting, perhaps indispensable, and for such knowledge Miss Wormeley's book will be very helpful to readers who have not access to the four large volumes in the definitive edition containing the "*Œuvres diverses inédites*."

She has done her work of selection thoroughly and with commendable tact, the result being a book that has few dull pages. Of the ten chapters three are devoted to history and politics, two to literature and art, four to Balzac's discussion of his own works, and one to an abridged rendering of the "Monograph of the Parisian Press,"—an opuscle, the "sparkling" qualities of which have surely been exaggerated. Whether the unprejudiced reader could infer from these selections the real greatness of Balzac's intellect

is questionable, but he would be compelled to confess that the writer of the pages on the Jesuits, on France after the Revolution of July, on Mehemet Ali, on Thiers, on Scott and Cooper, and on Brillat-Savarin, possessed a most brilliant and versatile mind that might have made its mark in the spheres of politics and of criticism. The devotee of the "*Comédie humaine*," however, will fare better than the unprejudiced or the uninitiated reader, for he will find throughout the volume abundant confirmatory evidence of the existence of those titanic qualities which he has learned to attribute to Balzac's genius.

That Professor Peck has learned to attribute titanic or even higher qualities to Balzac's genius is quite evident from the most striking and important sentence in his recent essay. "My own belief is," he is bold enough to write, "that at the last his [Balzac's] name will be placed higher still than Shakespeare's, at the very apex of the pinnacle of literary fame." Balzac's name has often before been coupled with Shakespeare's, but Mr. George Moore is the only critic I can recall who, prior to Professor Peck, ventured to assert the Frenchman's superiority to the great Englishman whom all the modern world regards as the supreme poet of the ages. Even the few of us who have felt that the personality behind the *Iliad* is fully equal in power to the personality behind the *Dramas* and the *Sonnets*, have had some diffidence in making our opinion known, and have ventured to claim for Homer only an equality with Shakespeare; Professor Peck's courage is of a higher quality, although it does not seem to be associated with the maximum of discretion. He is perhaps the Achilles among modern critics; he is certainly not the Ulysses. But he has weighty reasons to give for his fearless championship of Balzac's claims,—reasons that culminate in this sweeping sentence, which I, at least, not only do not challenge, but heartily subscribe to:—

"It is in Balzac that we get, as we get in no other single writer of any race or age, the life and character of an entire nation drawn for us in their true relations and with the multitudinous completeness of reality."

"Multitudinous completeness of reality" is good, and what is better, it is true; yet I am not sure that when we grant Professor Peck all that he claims in favor of Balzac we have settled the question against Shakespeare. It seems to me that Professor Peck does not sufficiently consider the matter of quality of work. Measured quantitatively, the work and genius of Balzac appear to me to be absolutely unmatched in the history of the mental achievements of humanity. No other artist has created so complete and huge a cosmos. But, measured qualitatively, his work and genius, while still tremendously great, can scarcely be said with justice to be supreme. Four writers, at least, seem to be of a more Olympian, divine quality than he—Homer, Dante, Shakespeare, Milton. Perhaps other names might fairly be added to this list, but the mere list is not so important as the denoting epithet,—Olympian.

Is Balzac Olympian? Does he, to borrow and widen a classification introduced, I believe, by Mr. Swinburne, belong to the gods or to the giants? With the best wish to maintain the supremacy of a writer who has been to me for years an inspiration and a solace, I can not bring myself to claim for him Olympian qualities. He is a matchless Titan; but he never sat, serene in his own right, on the very summit of Olympus. There may be some difference of opinion as to the grouping of the supreme poets upon the sacred mountain; but no competent critic has denied that their station is there above the clouds. Did Balzac ever fully emerge upon the heavenly heights? I think not, although I yield to no man in my admiration for that triumph of noble art, "*Eugénie Grandet*." Balzac is always the Titan. He struggles and aspires and succeeds. The denizens of Olympus, however, impress us with the sense of achievement, rather than with the sense of effort. Perhaps we may love the struggling demigod, nearer as he is to laboring humanity, more than we do the serene divinities that, seemingly though not really, make the heights without a strain; but criticism is, or should be, a matter of the

judgment rather than of the affections. Yet, after all, it seems quite clear that as the years go by Balzac's supremacy over all other writers of pure fiction is being more and more ungrudgingly admitted; it appears, therefore, to be a trifle rash for his admirers to attempt to shove Shakespeare from his throne in favor of a man who has been dead only half a century. Nor is it certain, that, if Shakespeare's place were ever declared vacant, Balzac, or any other writer, would be called to fill it. The twenty-first century may be inclined to think that Leonardo da Vinci is the most marvelous genius that ever lived.

Mr. W. E. Henley, in his article cited above, does not, like Professor Peck, undertake to pit Balzac against Shakespeare or any other great genius,—although, to judge from his notes to Byron, he is fully qualified for any feat in the prize-fighting department of literature. He undertakes, instead, to pit Balzac, as we thought we knew him, against Balzac “as he really was.” In other words he has written an essay that deserves to stand beside Mr. Jeaffreson's “The Real Shelley,” and other question-begging works of that class. I confess to an instinctive distrust of books that assume in their very titles that it is their function and privilege to set straight an erring world; nor has my prejudice against this sort of literature been removed by my perusal of Mr. Henley's essay. It is, to be frank, quite an unlovely though not unvigorous performance, based, it would appear, in the main, upon the recently published letters of Balzac to Mme. Hanska, and on the account given of this correspondence by M. le Vicomte de Spoelberch de Lovenjoul in his “Roman d'Amour.”

Mr. Henley believes that Balzac for a long time succeeded in imposing upon the world a conception of a chaste, hard working author and lover, overburdened by debts, calumniated by enemies, and only at the last rewarded with fame, money, and the hand of the woman he loved,—a conception entirely unwarranted by the facts of the life of a bon-vivant, a libertine, an actor in, as well as a narrator of, *contes drolatiques*. But

instead of sighing or laughing heartily upon his discovery of this (real or suppositious) imposition, Mr. Henley has acted as though his *amour-propre* were wounded by the fact that he had been taken in. Instead of feeling sorry that he must help to pull down an ideal, he seems to gloat over his task of destroying, at second hand, a great man's reputation for morality. It is needless to say, however, that the tone in which he writes will go far toward neutralizing the effects of his charges.

As to these charges, it is quite clear from the letters to Mme. Hanska, from the correspondence we have long possessed, from M. le Vicomte de Spoelberch de Lovenjoul's invaluable "*Histoire des Œuvres de H. de Balzac*," and from other sources, that the Balzac legend is true in so far as it represents the great novelist as an indefatigable worker, keeping several books going at once, living in the midst of the populous society of his own creation, eternally involved in disputes with his publishers, and driving his printers frantic by his wholesale emendation of proof sheets. It is doubtless to be granted that in some of his letters to the woman he loved he exaggerated, or at least made a little too much capital out of his labors—what hard-worked lover does not? It is equally true, however, that his works, as we possess them, are a sufficient and irrefragable proof that his titanic powers were put to full use.

With regard to his debts, the accessible evidence is less definite, but scarcely less convincing. It is hard to believe that the author of "*César Birotteau*" had not had personal experience of the vigor of the laws relating to debt. It is equally difficult to conceive of Balzac's being so hallucinated, or so determined to deceive those he loved, that he could fill page after page of his correspondence with minute details of his business troubles that imposed upon his sister, and still impose upon careful students. To believe that such a man could have taken the pains needed to inaugurate and sustain such a deception, requires a credulity almost, if not quite, equal to that of the ingenuous persons who

believe that Lord Bacon took the trouble to invent queer ciphers to establish in after centuries his authorship of the plays attributed to Shakespeare.

In the matter of his chastity, on which several pleasant hypotheses with regard to his genius have been built, it is hardly possible, in view of the specific nature of certain charges, for a foreigner to hold an entirely successful brief for Balzac; nor is it a topic upon which one can discourse with the freedom of a Frenchman, or in the tone of Mr. Henley. That Balzac was chaste either through temperament or through lack of temptations and opportunities is scarcely to be maintained. That his remarks on the subject in his letters to Mme. Hanska, which, of course, seem strange to Anglo-Saxons, are to be relied upon as proof of the blamelessness of his life before he met her¹, or of his saint-like fidelity to her throughout the entire period of their friendship, is to say the least improbable². There were periods in the intimacy when Balzac's letters were comparatively free from extravagant protestations, when his devotion, real though it was, probably did not prevent him from imitating in a certain important particular that immortal but not impeccable lover, Petrarch. There is no need, however, for going further into the matter here, save to remark that the charges made against him by no means prove that his affection for Mme. Hanska was not, on the whole, genuine, and that Professor Peck was undoubtedly right when he claimed, in a recent number of the *Bookman*, that Balzac's creditable relations with George Sand and his immense and intense absorption in literary labors prevent us from believing that he was, in any sense of the term, a libertine. That he was sensuous we have long known, and certain passages in the just-published letters bring the fact out strongly; yet these same letters

(1) See *Lettres à "L'Étrangère,"* p. 78.

(2) See *Lettres à "L'Étrangère,"* p. 500, for an indication that he thought sometimes of making a marriage of convenience.

prove still more convincingly that as he grew older the sensuous element in his composition played a less and less important part. His development was in the direction of the mental and the spiritual, with, however, a certain counterbalancing increase in his love of luxury and his aspirations for wealth and worldly power. That the monkish habit he was wont to don when working covered a saint, can be believed only by very unsophisticated persons; but it would require a malicious mind to deny Balzac's essential comprehension and attainment of the higher life. Let us now take a nearer view of the portly volume containing his correspondence with the woman who, after many vicissitudes, became his wife but a few short months before his premature death.

Balzac, like many other novelists, had female correspondents whose interest had been aroused by their perusal of his works. The most celebrated of these was Madame Hanska, *née* Countess Evelina Rzewuska, wife of a Polish gentleman of large estates. The "Scenes of Private Life" had attracted her greatly, and she was disturbed by the change of tone indicated by the "Peau de Chagrin." She wrote to Balzac under care of his publisher Gosselin, signing herself "l'Étrangère." This was in the winter of 1832, and she continued to write, finally begging him to let her know, through the columns of "la Quotidienne," that he had received her letters, and that she could follow them up with others in perfect security. Balzac inserted the notice, which is said to have inaugurated this furtive sort of correspondence, and in January, 1833, wrote her a long letter in which he confessed that she had been for him "the object of the sweetest dreams." From this date begins the correspondence, the originals of which are now in the hands of the great Belgian bibliophile who has done such loving service to Balzac's fame, M. le Vicomte de Spoelberch de Lovenjoul. The letters of the novelist, which, after appearing in the "Revue de Paris," have just been collected,

(1) Spasmodically from 1894 to 1899.

number one hundred and fifty-six, and run from January, 1833 to January, 1842. A few of them had previously appeared, with variations, in the general correspondence published years ago by Lévy, in which collection some twenty-five admirable letters, covering the years 1843-1846, had also been included. We then have one hundred and eighty-one¹ letters from Balzac to the woman who dominated the latter half of his life, and if this appears to be a small number, when compared with the vast outpourings of the Brownings to one another in their fairly short period of friendship and courtship, we must remember that Continental postal services were not then what they are now, and that Mme. Hanska was a good deal of a traveler. Besides, some of Balzac's letters may have been lost, and perhaps others were a little too fervent to be preserved by a married woman whose husband, however complaisant, was aroused on at least one occasion. Then, again, it is no matter for regret that the correspondence consists in the main of journal-letters added to as Balzac got the opportunity; that it is not a promiscuous assortment of letters and notes from which we extract with difficulty the few that interest us.

It is needless in this connection to follow the details of Balzac's relations with Mme. Hanska, as revealed in these letters and in other ways. It makes little difference whether on the occasion of their first meeting at Neuchâtel the lady received her favorite novelist with an embrace or with a revulsion at finding that his personal appearance did not answer to her dreams. We need not inquire whether M. Hanski was, even in view of foreign customs, too complaisant, or whether after his death his widow treated Balzac fairly in continually putting off their marriage on account of property considerations. These matters are important to the student of Balzac's life, but the general

(1) Not strictly correct, as a curious one was written by the lover to the husband.

public has little concern with them, and we at least, shall find our chief profit to lie in endeavoring to determine the value of the correspondence as literature.

In many respects its value is high. Balzac is not, strictly speaking, a great letter writer, although many noble and beautiful pages can be culled from his more elaborate epistles; but he poured forth his capacious, tumultuous soul in his letters, and the self-revelation makes most interesting reading. It is not so much a contribution to the literature of passion that he furnishes, although a psychologist might find it worth his while to study certain letters—it is rather a contribution to the literature of egoistic power. The Titan stands before us in all his puissance. His affection for the woman he loves is large and generous, yet masterly; his contempt for the men that harass him is that of a vexed giant; his pride and absorption in his work are limitless; when pressed to the wall, his energy and resourcefulness emerge superbly; he is not, like ordinary mortals, occupied with one book, with one set of characters; he is writing three or more stories at once and revising as many more; he has political and journalistic aspirations; he has speculative schemes that are to make him fortunes; he is prodigal in his luxury; he expends wholesale energy in buying presents for Mme. Hanska and her children; he squanders his physical strength just as he does his money, but is confident that he will eventually achieve his rightful fame, amass an ample fortune, and win the countess for his wife. As the revelation of a powerful personality, these letters, then, have few or no equals; they are as truly “human documents” as, according to Taine, the novels of the *Comedy* are.

They are not spiritual documents like the Browning letters, or documents dealing with the amenities of friendship and social life like the Stevenson letters; and it may be doubted whether, in translation, they would appeal to one-tenth of the readers that have recently been fascinated with these two epistolary collections. Yet they set before us a far greater man than either

Browning or Stevenson, and their value will increase with the years. Browning was a great man, but what he tells Elizabeth Barrett about his literary work seems almost trivial when we compare it with what Balzac tells Mme. Hanska of his. Stevenson was a marvel of energy, considering all things, but when he writes about his work, he does not impress us as does Balzac. The latter has not Browning's spiritual insight and depth; he has not Stevenson's charm; but he dwarfs them both by his titanic energy and power. He has more sovereign force and ambition than any other man of letters of this century; indeed, at times his titanic qualities do not suggest the man of thought at all, rather the man of action, and, in particular, one supreme man of action,—Napoleon¹.

It is, of course, impossible to prove the truth of such statements. Nor is it unlikely that a devotee of Balzac may read into these letters ideas and conceptions which he has derived from previous study of the master's gigantic work in fiction. Yet, on the whole, we should expect the correspondence to corroborate these ideas and conceptions, and, assuming that it does, we may take our leave of it by excerpting a few passages of special beauty or interest that may possibly serve to attract readers who will not mind the foreign language and the excessive bulk of the volume. These extracts will not have the charm that attaches to the best passages in the passionate correspondence of Musset and George Sand, but they will probably appeal more surely to the Anglo-Saxon reader.

Here, from the very first letter, is an early and adequate statement of what Balzac intended to accomplish in his work and an implied protest against a kind of criticism he has often had to bear:—

“Ayant entrepris, témérement sans doute, de représenter l'ensemble de la littérature par l'ensemble de mes œuvres; voulant construire un monu-

(1) Balzac wrote Mme. Hanska that one of his friends had declared that “Napoleon had not shown so much will power, or so much courage” as he. *Lettres à “L'Étrangère,”* p. 153.

ment, durable plus par la masse et par l'amas des matériaux que par la beauté de l'édifice, je suis obligé de tout aborder pour ne pas être accusé d'impuissance. Mais, si vous me connaissiez personnellement, si ma vie solitaire, si mes jours d'étude, de privations et de travail vous étaient contés, vous déposeriez quelques-unes de vos accusations et vous reconnaitriez plus d'une antithèse entre l'homme et ses écrits."—(*Lettres à "L'Étrangère,"* p. 4.)

In the following passage we have a moving personal note of a very different sort :—

"Je suis comme un prisonnier qui, du fond de son cachot, entend au loin une délicieuse voix de femme. Il porte toute son âme dans les fragiles et puissantes perceptions de cette voix, et après ses longues heures de rêverie, d'espérances, après les voyages de son imagination, la femme belle, jeune le tuerait, tant le bonheur serait complet. Vous traiterez cela de folies; cela est la vérité, et bien au-dessous de la vérité, parce que le cœur, l'imagination, le romanesque des passions dont mes ouvrages donnent l'idée, sont bien loin du cœur, de l'imagination et du romanesque de l'homme."—(p. 13.)

It is not possible to believe that Balzac wrote these sentences with his tongue in his cheek, or with his thoughts fixed upon another woman. He may have forgotten certain deviations from the straight and narrow path that prognosticated others; but for the time being he was sincere,—which is saying not a little both for him and for other fallible mortals. The spiritual constancy of Browning was beyond him,—yet, after all, he was the fuller man, probably being to the Englishman much what a high, wide mountain range is to a single jutting peak, however massive.

Nor was he lacking in the spiritual note, as the following witnessses :—

"Oh! ma bien-aimée, celle qui se présente dans les cieux accompagnée d'une âme heureuse par elle, y entrera toujours! J'ai connu de nobles cœurs, des âmes bien pures, bien délicates; mais ces femmes-là n'hésitaient pas à dire qu'aimer est la vertu des femmes."—(p. 42.)

Yet the imperial will, which is hardly spiritual, was ever ready to assert itself, veiling its fiery potency, however, in the presence of his beloved :—

"Je veux gouverner le monde intellectuel en Europe et, encore deux ans de patience et de travaux, et je marcherai sur toutes les têtes de ceux qui vou-

draient me lier les mains, retarder mon vol! La persécution, l'injustice me donnent un courage de bronze. Je ne suis sans force que contre les sentiments doux. Vous seule pouvez me blesser."—(p. 43.)

He needed more than two years for the realization of his ambition, but from the pen of what other contemporary could we read such words without smiling? And could many other men have expressed their love more tenderly and beautifully than in the following passage?—

"Maintenant, mon épouse, mon adorée, sache bien quoique je t'écrive, pressé par le temps, chagrin ou joyeux, qu'il y a dans mon âme un immense amour, que tu remplis mon cœur et ma vie, que si je ne t'exprime pas toujours bien cet amour, rien ne l'altérera; qu'il fleurira toujours plus beau, plus neuf, plus gracieux, parce que c'est un amour vrai, et que le véritable amour va croissant. C'est une belle fleur, à longues années, plantée dans le cœur, et qui étend ses palmes et ses rameaux, qui double à chaque saison ses belles grappes, ses parfums; et, ma chère vie, dis-moi, répète-moi toujours que rien ne froissera ni son écorce ni ses feuilles délicates, qu'il grandira dans nos deux cœurs, aimé, libre, soigné comme une vie dans notre vie, une seule vie! Oh, que je t'aime! et quel baume cet amour répand sur moi, je ne sens pas de douleur possible. Tu es ma force, tu le vois."—(p. 49.)

Surely no man could have written these words save one who could sincerely say:—

"Je ne respire, ne pense, ne travaille que par toi, pour toi. Quelle belle vie: l'amour et la pensée!"—(p. 62.)

And again:—

"Oh, je souffre! Je n'ai pas une passion passagère, mais un unique amour."—(p. 75.)

Yet we must not forget that it is permissible for lovers to exaggerate, that this would be but a sorry world if they did not. Few, however, would gravely inform their mistresses that they had not laughed for two months, (p. 146,) just as few could pen so moving a description as the following of the real woes of a great artist and lover:—

"Ce fut une triste soirée. Je me suis mis à ma fenêtre, j'ai regardé dans l'espace les pays que je venais de quitter et où j'avais été chercher près de vous de la jeunesse, du repos, de la force, rafraîchir le cœur et la tête, oublier

l'enfer de Paris, et, dans cette attitude, quelques larmes m'ont gagné. J'ai mesuré l'étendue de l'abîme, j'ai soupesé le fardeau, j'ai cherché au fond de mon cœur le coin où est le principe de ma puissance, et je me suis résigné. Ce sont de ces grandes scènes dont le secret est entre Dieu et nous. Mon Dieu! Si vous m'aviez vu, vous auriez su pourquoi j'étais si triste en vous quittant, et vous auriez compris la portée de ce que je vous disais, quoique sous une apparence gaie, quand je m'écriais: 'Je vais aller me replonger dans la cuve et recommencer mes misères.' ''—(pp. 259-260.)

There are many other quotations one would like to make from this correspondence which M. le Vicomte de Spoelberch de Lovenjoul has so admirably edited, but space is wanting. It would be instructive to quote from the closing letter of the series in which Balzac replied to one telling him that M. Hanski was dead. Very few men could have written better under such circumstances. It would be pleasant, too, to show that Balzac ought to be remembered for his generosity to men like Jules Sandeau, and not so much for his bizarre cane, his consulting fortune-tellers, his pretensions as a connoisseur and landed proprietor, and his other foibles. It would not be unamusing to cite in full his remarkable proposition to travel to any place in Europe in order to try his mesmeric powers on Mme. Hanska's husband and daughter, should they be ill. It would be better still to collect his epigrams, such as: "Moi . . je n'ai que le cercueil en perspective pour me reposer; mais le travail est un beau suaire," or his occasional flashes of true poetry, such as: "N'y a-t-il pas eu un instant où Sisyphe n'a plus ni pleuré, ni souri, où il a participé de la nature des rochers qu'il soulevait toujours"? But it is, after all, impossible to do full justice whether by quotation or by praise to any great book, much less to the work of a man who could truly say of himself:—

"Je ne suis jaloux que des morts illustres: Beethoven, Michel-Ange, Raphaël, le Poussin, Milton, enfin tout ce qui a été grand, noble et solitaire m'émue."

HENRY IRVING

ACTOR: MANAGER: AND DIPLOMATIST

CLEMENT SCOTT, *London.*



HE greatness of an actor must more or less be decided by posterity. His contemporaries, society at large, and the playgoers of his time can grant him an *accolade*, but the true *panache* of praise can only be bestowed on him by comparison in the after time when he has passed away. It is thus that we estimate the talent of a Garrick, a Kemble, a Kean, a Forrest, a George Frederick Cooke, and a Booth. We know from history and reminiscence what they did; we see what their descendants are doing to-day. The finishing touch is always given by posterity.

THE ACTOR.

Any decision on the greatness of Henry Irving as an actor may be conveniently postponed. We can pronounce on his keen dramatic instinct, on his marvelous versatility, on his picturesque methods, on his humor, on the swiftiness of his expression, on that magnetic influence that every thinking audience experiences when Henry Irving is on the stage, but whether this particular actor is great in the same sense that Edmund Kean is supposed to have been great, and Tommaso Salvini is known to have been great, are questions that may safely

remain unanswered, until the art of the great Victorian era is discussed in its entirety.

It can not be denied that Henry Irving was elected to the distinguished post he held so long, by the unanimous voice of the people and of his own profession. Great or not, he was and is the most prominent actor of his time. He has made a greater mark than any of his fellow actors on the people. Some may prefer Samuel Phelps in one character, and Charles Kean in another, but Henry Irving, from the philosophy of Hamlet to the jingle of the "Bells," has done more striking things on the stage, and has done them better; has displayed a wider range of character, more subtleness, weirdness, and observation than any actor since Macready. During his long and useful career, he borrowed freely from the accepted repertoire of Charles Kemble, Macready, and Charles Kean, but not one of those actors played such an incessant round of characters, or made fewer mistakes in them, before the Irving dynasty at the Lyceum.

It is often forgotten that Henry Irving did not appear in London, in the year 1866, as a raw and untrained novice. Quite the contrary. The dramatic instinct had possessed him in early youth. He was "stage struck," as many clever and observant lads continually are, but he went through the mill in the provinces; he studied his art under actors of rare experience; he tried every kind of part and range of character, and under singularly depressing and despondent circumstances. Henry Irving's provincial career was a comparative failure. Again and again when he tried to soar, he was beaten back by the fierce gust of adverse opinion. No one knew better what the actor could do than the man himself, but he received very scant encouragement indeed from his audiences, his fellow actors, or his managers. It requires a very strong will and determination to conquer such prejudice as this, but that Henry Irving did conquer it, is proved emphatically by his career. That he had a strong manner and a natural awkwardness on the stage during the early days of his

career is sufficiently obvious, and these faults, insisted on and pointed out by the critics, would have broken and crushed a more sensitive and nervous temperament.

The absence of emotional quality, a defiant carelessness of public opinion, and a selfishness that borders on the sublime, probably saved Henry Irving at the outset of his stage life. The young actor did not break his heart, because this particular one was not made of the material that breaks very easily. He must have been a weird, odd, silent, and introspective young man. To the few friends he had, he was loyal, and he might have said with Hamlet, "Man delights not me; nor woman neither; though by your smiling you seem to say so." Though not exactly a misogynist, he must in early life have qualified himself for the part.

A great deal too much stress has been laid on what is called the Irving manner. No celebrated or distinguished actor ever lived who had not a pronounced manner. He is not worth his salt if he does not own one, or is so tame that he can not be imitated. Macready, Phelps, Charles Kean, Robson, Benjamin Webster, and scores of others, had a manner that might have been cut with a knife. They were not less distinguished as artists on that account.

The people who imitate Edmund Kean, Cooke, Forrest, and Booth, clearly point to a very pronounced manner. It is only the accent of intensity.

Henry Irving started on his career as a student of strong character, the more eccentric and mysterious the better for him. He objects, as many other actors do, to being called a "character actor," arguing that every part an actor plays is a character. This is perfectly true, so far as it goes, but there is no other phrase which conveniently conveys the attack Irving makes on the eccentric, grotesque, and weirdly mysterious side of human nature. A broken down gambler and spendthrift, a pompous Mr. Dombey or a grinning Carker, an airy, fantastic Robert Macaire, a brutal,

slouching Bill Sykes, a contrasted Lesurques and Dubosc, innocent man and murderer, an Alfred Jingle or a Jeremy Diddler,—these were the characters dear to the Irving mind at the outset. They were strong types of assorted character, and the essence of caricature belongs to the actor's art.

Irving's Mr. Chevenix, in "Uncle Dick's Darling," was probably founded on the real Mr. Dombey he had played years before this was elaborated into Digby Grant in the "Two Roses,"—who, stripped of his surroundings, is pure Dickens. The love of Irving for Dickens, and Dickens for Irving, was mutual, for it was the brilliant novelist who first sounded the trumpet of fame for the actor.

The weird, mysterious, and fantastic side of Irving's art, and here he has had no rival, was found in a close study of Hood's poem of "Eugene Aram," to be followed by the marvelous creation of the haunted Burgomaster in the "Bells,"—the stage "Eugene Aram,"—never, I think, sufficiently appreciated as a psychological study, and by "Vanderdecken," one of the most beautiful and satisfying performances in this line that the actor has ever done. For command and mastery of detail, a study finished like a Meissonier, a Ruysdael, or a Hobbema, I should select old Brewster, the Waterloo veteran; but for beautiful expression and poetical tone, commend me to the "Vanderdecken."

The study of Shakespeare came to Henry Irving comparatively late in life. In the provincial days, he must have approached the mighty poet fitfully and with no strong enthusiasm. The first great part selected for attack was naturally Hamlet, and Irving brought to the study of the character natural gifts of the greatest importance. His tone of mind, his introspective qualities, his dreamy, absorbed nature, his absence of enthusiasm, all pointed to something like an ideal Hamlet. Those friends or advisers were right in their mental assay when they recommended Hamlet for Irving's first Shakesperean venture. His Hamlet is the best English speaking Hamlet I have ever seen, or am likely

to see. I have often wondered that he has played the part so little in London, and has neglected to force its old fame for the sake of another generation. Next to his Hamlet I should place his Benedick. None of us has ever seen a better, though *au fond*, such a part is out of the Irving line. Nor has any one, on the whole, seen a more dignified Shylock, or to my mind a more original or convincing Macbeth, or in the first act a better Richard the Third. That he should fail as Romeo and Othello, was as foregone a conclusion as that he could not succeed as Claude Melnotte; but these mistakes were atoned for in Iago and Werner.

The actor's expression is greater than his strength, his rapid changes of effect are more marked than his power, hence the craft and cruelty and cunning of the Richard; the diplomatic humor of the Richelieu; the gain-greed and Eastern dignity of the Shylock. Probably he was greater in the craft of comedy than Edmund Kean or Macready. But when the tragic outburst was necessary, when the high "C" was required, the top note of tragedy, when the actor was required to sweep everything before him, then, and not before, he was found wanting. Henry Irving was never a tragedian in the highest sense of the term. Little Robson might have been one, never Henry Irving. Nature denied to him the superb voice, presence, and majestic splendor of physique found in a Salvini. Only such physically gifted men can play Othello. No *vis comica* is wanted here, no mere acting, but the splendid force of the tempest of tragedy as it sweeps through forests and over the everlasting hills and mountains. The two performances in the Henry Irving repertoire that may be pronounced almost faultless are his "Louis the Eleventh," and "Thomas à Becket."

The death scene in "Louis the Eleventh" is the finest thing that Irving ever did in thoughtful, detailed, and pictorial art. Here Charles Kean could not touch him. It is an impression that nothing can shake or move. But for a performance of sustained

beauty, of refined art, of storm subsiding into calm, and passion subsiding into peace and resignation, I have seen nothing more admirable on the modern stage, than the Becket of Henry Irving.

THE MANAGER.

“Shakespeare spells ruin, and Byron bankruptcy.”

This historical phrase, or epigram, has lasted on the English stage ever since the days of Frederic B. Chatterton at Drury Lane. It was invented by Charles Lamb Kenney, the literary adviser of Chatterton, in one of the numerous placards and addresses he put out to air his grievances, and to take the British public into his confidence.

Chatterton had in his own fashion done what he could for Shakespeare, and he produced Lord Byron's “Manfred” on a very fine scale, with Samuel Phelps as the moody hero, at Drury Lane.

But all the same, I never could quite believe that either Shakespeare or Lord Byron was responsible for Chatterton's ill luck. His failure was due mainly to the folly of having too many irons in the fire. One theatre, Drury Lane, and that the largest in London, was not enough for him, so he took the Princess's Theatre in Oxford Street into the bargain, and toyed with management at the Adelphi Theatre in the Strand. That was quite enough to break any manager's back.

This ambitious man was not the first of his race who, once started, had a mania for managing. So had Benjamin Webster, and never made it pay. So had another Byron,—Henry James, the dramatist and burlesque writer,—who took two huge theatres in Liverpool, and lost a small fortune. So had Sir Augustus Harris in a way. He would have been a richer man—he had stuck to Old Drury and never dreamed of the Palace Theatre. So in these modern times have George Edwardes and Charles Wyndham, who apparently can never have too much work to do.

Shakespeare can always spell ruin, and Byron bankruptcy, when there is a loose joint in the managerial armour; but the ambitious

manager is inclined to saddle the wrong horse with the results of his ambition.

At the same time, it must in all fairness be conceded that precedent favored the contention of Chatterton.

William Charles Macready never made Shakespeare or the "legitimate drama," as it was called, pay either at Drury Lane or Covent Garden. He was an irritable, imperious man no doubt, never very popular with his fellows, and more of a misanthrope than a manager, but he led a quiet, modest, thoughtful, and artistic life, and was never tempted out of the beaten course by the distractions of society.

Probably the only lords and dukes he knew were stage acquaintances, and no more. The society he loved was purely literary and artistic, consisting of men like Bulwer Lytton, Robert Browning, Charles Dickens, and John Forster. These he met from time to time, but very rarely, and that on the actor's holiday, —Sunday. An actor who regarded his work seriously in those days, had far too much to do and think about to entertain or be entertained. Macready, who never loved the stage or the profession of acting, retired in 1851 on a modest competence, and literally buried himself alive at Cheltenham, the home of half pay officers and retired military or professional men.

Samuel Phelps was even more modest and exclusive than his old master Macready. He battled bravely for Shakespeare and the legitimate at Sadlers Wells; he had an excellent business partner in good old Tom Greenwood; he lived an isolated and modest life with his family in the suburb of Islington, and during his long career as a manager, I do not suppose he was ever seen inside a club, or in the precincts of a society mansion. But though his stage expenses were comparatively small and his company competent but cheap, he had to "throw up the sponge," and in the later years of his career took to starring under the management of John Hollingshead of London and Charles Calvert of Manchester.

Charles Kean loved a lord very little better than either Macready or Phelps. He was educated at Eton according to his father's historic wish, and he was proud of his official position at Court, where he was Master of the Revels.

Charles Kean was almost absurdly lavish with his Shakesperean productions; he "gilded refined gold" and "painted the lily" indeed at the Princess's Theatre, but he never made a fortune in management. In fact, the best money he ever realized was as a star with his wife in America.

To the astonishment of the wide world, Henry Irving is the last of the great classic managers to own up that he has been beaten at the Shakesperean game. His legacy to the young manager is apparently this: "Leave Shakespeare alone. He is hopeless as a stage speculation, unless backed by a subvention from state or art patron." This comes with the shock of a douche of cold water on the back, after all we have heard of the glorious deeds of the Lyceum Knight, and the revival of art plays and the culture drama, of the educating influence of the Irving-Terry combination, and of the glories of the Irving dynasty, who put Shakespeare and Goethe on the stage as they had never been presented before, and popularized the classics so as to earn the eternal gratitude of art-loving countrymen and countrywomen. It came like a thunderclap, a "bolt from the blue," when we remember the gallons and hogsheads and kilderkens of praise that have been stored up in the Lyceum cellars. What does it all mean? During the whole of Henry Irving's reign, the Lyceum has never been known to be empty; he has never had a serious rival in the field he so admirably exploited; though his productions were lavishly gorgeous, his company has always been a comparatively cheap one, his authors' fees were infinitesimal; he seldom presented a new or original play, notably those by W. G. Wills, that were not paid for down with a lump sum; Shakespeare, Goethe, and Lord Lytton cost him nothing, the fees also were nothing; and yet, the old cuckoo cry

of Chatterton is virtually repeated by Henry Irving at the winter end of his glorious career. If so little was made in London with those undoubted successes,—plays by Shakespeare, notably *Hamlet*, running longer than has ever occurred in the history of the world,—was nothing made in the English provinces, nothing made in America, by this Napoleon of management? It would be interesting to learn how far society, which is supposed to be such a friend to the drama and the popular actor; how far the aristocratic patrons of the drama, who are seldom superior to getting a seat for nothing, and are usually given a champagne supper on the stage into the bargain; how far the lavish hospitality attendant on his new and most extravagant friends, who deigned to patronize the stage, are responsible for so disheartening and humiliating a confession.

It is quite true that Squire Bancroft met his first reverse with Shakespeare, with calmness and philosophy; it is certain that another celebrated management, that of John Hare and W. H. Kendal, did not come out of the Shakesporean fire unscorched; but that Shakespeare did not pay at the Lyceum seems almost incredible, and shakes all the foundations of dramatic belief.

The success of the actor-manager has been rammed down our throats with such force that it has almost choked some of us. I question if a lay manager would not have been more alive to the sensible proceeding of cutting your coat according to your cloth. They tell us that in these luxurious, extravagant, reckless, and decadent days, no one will look at Shakespeare unless his plays are mounted with an excess of splendor that is almost criminal in its prodigality. Charles Kean was bad enough, but Henry Irving went one better. If Charles Kean contented himself with cotton velvet, Irving did not, so he selected Genoa silk velvet instead. He followed to a nicety the Shakesporean and melodramatic repertoire of Charles Kean, but he “mounted” him off the stage.

Still, knowing and deprecating as I do this fever of the eye for

spectacle, realizing the fact that nine tenths of the society women go to the theatre, not to see a play, but to covet the dresses, saying again and again to these society patrons, "*Timeo danaos et dona ferentes*," lamenting as many of us have done this crushing of managers and actors and actresses under the Juggernaut Car of a satiated, feeble and fickle Society, still, I should have thought that spectacle for spectacle, extravagance for extravagance, costliness for costliness, a Lyceum Shakesperean production ought to have paid as well as a Drury Lane pantomime.

Now we know a pantomime does pay, for Sir Augustus Harris left a considerable sum of money behind him to substantiate this fact, and the new Drury Lane company, headed by a lay manager, publishes an annual balance sheet.

It is doubly disappointing to learn that Shakespeare has not been a conspicuous success at the Lyceum, and that the handshakes of society have proved a somewhat expensive luxury, because the output from the Lyceum art mine has not, on the whole, been extensive.

Authors of admitted ability have never been encouraged at the Lyceum; quite the contrary, artists of talent have been positively discouraged. It would be easy to tot up the Lyceum original authors on one hand. Henry Irving and Ellen Terry have gone on for years and years with a very fair, but not very distinguished, stock company which was seldom recruited by young, able, and vigorous assistants.

Other managers, notably the Bancrofts, have given hostages to fortune; George Alexander is the only manager of importance whose lineage can be traced to the Lyceum school.

True, Pinero produced a little comedietta at the Lyceum when he was a boy actor, but has he or Sydney Grundy or Carton or Henry Arthur Jones or Hermann Merivale, or scores of others, ever been tempted to display their original wares on the Lyceum stage. Where are the young actors or actresses who have blossomed and bloomed on the Lyceum stage? Echo answers

where ? The favorites of the hour have become older and older as the fabric of the playhouse has become dingier and dingier.

THE DIPLOMATIST.

Tact and diplomacy are the qualities almost universally accorded to Henry Irving as a public character, an actor, and a manager. He has certainly proved a very popular head of a profession that he has, mainly by his endeavor, elevated in the eyes of the public. He was always considered the "Keeper of the Key" of the stronghold of Shakespeare, the champion of the poetic, imaginative, and classic drama, and it has been declared, over and over again, that he has done as much if not more than any of his gifted predecessors, in doing for our higher stage what state subventions and royal or ducal grants do in other countries.

All this is perfectly true, and the credit justly earned, but some may think it scarcely diplomatic or tactful at the close of so brilliant a career, not so much to "throw up the sponge," so to speak, but to own that his energies had not met with their just reward, to hint that the game was scarcely worth the candle, and to warn the enthusiastic managers of the future not to follow too closely in his footsteps. He may have had every evidence for arriving at those conclusions, but it is open to doubt if it were wise to express them at this particular moment.

Sir Henry Irving is the first actor who has been knighted by his Sovereign and been seen at the Court of St James. Painters, musicians, men of letters, occasionally journalists, have been so honored, but no other actors for services to the stage, save Sir Henry Irving and Sir Squire Bancroft. The names of Sir William Don and Sir Randal Roberts will be quoted, both once popular as actors and authors. But Sir William Don, a man of gigantic stature, once very popular in Australia, was a baronet in his own right and line of descent, and so was Sir Randal Roberts, who commenced his career as an officer in the English Army. Sir Augustus Harris was not knighted for any services

in connection with the stage, or as manager of Drury Lane Theatre. He was knighted because he was a sheriff of the City of London at the time of the Queen's Jubilee.

The distinction given both to Sir Henry Irving and Sir Squire Bancroft was thoroughly deserved in both cases, and no one grudges them the privilege of the *accolade*. But whether the new departure from precedent was a politic or diplomatic one is, to say the least of it, open to doubt. Once unlock the stable door, and away go the horses. The bestowal of two knighthoods to actors has been followed by a mad rush for many more by those who are quite as ambitious, but scarcely so eligible. The consequence is that the stage has bowed very low to society; the whims and extravagances and eccentricities of society women have been rather slavishly followed, and scores of actors and actresses who had no more chance of distinction, royal or otherwise, than the man in the moon, have been dragged here and there to benefits and bazaars and afternoon parties, to recite or act for some charity in which Royalty was concerned, in order to curry favor for the new manager, who was supposed to be in the running for another knighthood.

I can not say that acting is any better, or the dignity of the art more distinctive, since the award of these special honors which were supposed to carry so much weight.

As a theatrical tactician and a dramatic diplomat, Henry Irving naturally encourages with all his power and position the English Actor-Manager, or Star System, as opposed to the American Syndicate, which is virtually what I call the Lay Manager System. I have carefully studied, inquired into, and seen the results of both, and though no system of the kind can be pronounced faultless, I am decidedly of the opinion that in the interests of the dramatists, of the young actor, and of the rising actress, in order to insure the advance of good all-round, symmetrical work, the lay manager, on the whole, does far more good to dramatic art than the actor-manager. I will proceed to give my reasons.

The actor-manager is, and must be, a star. He may be a solitary star shining in the theatrical firmament, or he may be a king star with a queen star by his side, but star he must be. Now, it is the province of stars to sparkle, and if possible, they seem to sparkle best when they are isolated. The theatrical star is an adept in the art of looking after number one; for number one is the first consideration. Plays must, therefore, be bought or secured somehow, not always for their proper merit, but to suit the idiosyncrasies, the manner, the eccentricity, or the vanity of the king star or queen star, who may be, and very generally is, a very indifferent player. Thus literature suffers. Plays are written to order, and are often cut down, mangled, and ruined, so as to please the star and keep the satellites in the background.

Recently I heard a king star and queen star in America, bitterly complaining of the success of a clever and workmanlike play in which they were engaged and concerned. The grievance was that it was a good all-round play, that it contained plenty of good parts, but that the interest, comic and serious, was too fairly divided.

"Then of what do you complain?" I urged. The old, stereotyped answer came that I have heard thousands of times: "You see, we are stars. *The public want us and nobody else,*" which, in plain English, means the public want an indifferent play and poor acting, in order that the stars may shine against a black background. In this case the proof of the pudding was in the eating. The public preferred a good, sound, interesting play, well acted by capable people to a "star" play which would probably have been very tedious, apart from the "shining lights" in question.

Now, this was a play exploited by an American syndicate, was judged by a man of the world, was written by an author with a strong dramatic faculty and knowledge of the stage, was remarkably well acted by competent artists, and selected by a layman

who had "no axes of his own to grind," save making the play a literary, dramatic, and, of course, a financial success.

In England, if such a play had been offered to a recognized star actor or star actress, it would in all probability have been refused point blank as a thing unworthy of a mighty man or his dramatic partner. This, then, would have been a grave injustice to the clever author, robbing him of money and reputation. If not absolutely refused, the author would have been asked to tone it down, which means, throw the rest in the shade, and make the stars more prominent, in fact virtually spoil your play. The *res angusta domi* often persuades the author into this luckless, fruitless course. He does not want to lose the patronage of the actor-manager. He earnestly desires that his name shall be kept before the public. So the play is altered and mangled into shreds. This, again, is an injustice to dramatic literature.

How many scores of clever but immature plays there are at this moment, by known and unknown dramatists, which might be corrected, written up, and perfected at the suggestion of a lay manager of literary tastes and familiar with the ways of the stage. But no actor-manager in the world would suggest such a course. Writing up a play to benefit art is not in his province; writing down a play to suit himself, most decidedly is. He has got the old, egotistical cry ringing in his ears, "The public want *me*, they come to see *me*, they pay to see *me*."

The third injustice is, I think, a more serious one still, for it affects the young actor and actress who would have risen to position and promise under the old rules of the old stock companies. In England, again and again, young men and young women of earnestness, enthusiasm, and remarkable talent, are either beaten back or kept in a corner by the actor-manager system. There must be only one King of Brentford in any play, never three, under any circumstances.

Rivalry is as gall and wormwood to the ordinary actor-manager and his "comrade." They can not endure it. When their

performances are judged by the critic, they consider it a "good notice," if they alone are praised and the rest are blamed; but when praise and encouragement are fairly distributed, it is, according to the star, "a bad notice."

How often have I seen at rehearsal, when some young, clever fellow stood out boldly and brilliantly, and promised to make quite a hit in a small part, that the actor-manager, who invariably stage manages his own productions, took the enthusiast to one side and said, "Yes! yes! very good, my boy, from your point of view, but I would not do it that way, if I were you!"

And then he proceeded to courteously mislead him, or at any rate to cut his claws most effectively. Very few young actors have the courage to endure that fatal douche of cold water. With the young actress it is even worse. If the necessities of the play require her services, and she does so well that she elicits general and generous praise, she is seen in that theatre no more. While she remains there, her life is made unendurable by a thousand and one petty annoyances. But when the play is done with, and she wants another part, the door is very sweetly and courteously shut in her face, "There is nothing for you in the next production, my dear."

Thus the clever *débutant* and the clever *débutante* are kept in the background, or outside the thickset hedge. They know the actor-manager, and dare not come "betwixt the wind and his Nobility."

"I am sir Oracle,
And, when I ope my lips, let no dog bark."

That is too often the attitude of the actor manager. Now, I do not think that these things could occur, or at any rate, not to so violent an extent, under the lay manager, or syndicate system.

At all events, I am prepared to prove this; and I do not think the statement can be questioned, that in the year just past (1899) there have been far more plays of workmanlike and literary value produced in America, or under the instigation of American

managers than in England, and again, that the general average of good acting, women and men alike, old and young, stars and satellites, is far higher to-day in America than in England.

For instance, try to cast "Zaza" from the whole round of English companies, and disappointment stares you blankly in the face. People may like the play, or dislike the play, they may call it immoral, which it is not, or sneer at it in a dozen tones; but it has unquestionably brought to the front in Mrs. Leslie Carter, one of the most dramatic, boldest, and most emotional actresses that I have seen on the English speaking stage for many a long year, an English artist with the French style in utterance, gesture, electricity, and a voice that is as rapid as a cataract, but at the same time as resonant, as clear, and as beautiful as a bell. In America "Zaza" has packed house after house, in city after city. In England, if the actress had failed to reach high water mark, we should have been told, "What a dreadful play!" I heard an English lady argue recently that any actress in the world could play "Zaza." She insisted that the part plays itself, and that no one could fail in it.

There never was a greater fallacy. It requires the highest comedy and the loftiest drama, emotion, temperament, vivacity, versatility, and *power*. The modern critic, as a rule, does not understand acting, but the public does, and turns its back very promptly on the acting we ordinarily get from the English star queen, who sits on the same throne as the star king.

The institution of the English Actors' Association is always quoted as Henry Irving's master-stroke of diplomacy and tact. It certainly earned for him vast popularity among his brother and sister artists, who are naturally glad when such a powerful influence can advance the interests of their profession.

The primary idea of the Actors' Association was a very wholesome and admirable one. It was designed, in the first instance, to do away with difficulties and scandals that pressed hard on the artists of every degree. The unwholesomeness of the dressing

rooms of actors and actresses; the evils of bad sanitation in provincial theatres; the deposition of the "Bogus Manager," otherwise swindler, who left hopeless and penniless, men and women stranded at distant parts of the country, were very proper subjects for an association of actors.

But this particular institution gathered strength under the presidency of the most popular of actor-managers, and has become a very formidable trades' union, which has it in its power not only to minimize the freedom of the press, but to interfere with the liberty of the subject. It is no part of any such association to protest against independence in the columns of a public journal, or to examine and ticket candidates for stage honors before they are permitted to earn their living on the stage.

However, all these things, and many more,—did they not come to pass under the diplomatic consulship of Henry Irving? He, of all others, can in these matters say: "There is nothing succeeds like success."



THE SOUTHERN QUESTION

EDWARD P. CLARK, *New York.*



THE Southern Question, in one or another of its manifold phases, is the one issue in American politics which has been passed on from one generation to the next throughout the nineteenth century. It has sometimes been thrust temporarily into the background by other questions, which became, each in its turn, for a while the burning ones of the day. More than once it was supposed to have been solved by compromise legislation in Congress. It was the cause of a great civil war, and it led to radical amendments of the Federal Constitution, which were expected to dispose of it finally. The generation which fought this war and made these changes is now fast passing from the stage, but it has been forced to leave the old problem to be still grappled with by its successor in the twentieth century.

At bottom, this has always been a question of the relations between two races of different colors, which occupy a large portion of the country. During the past thirty years, it has become a question of the relations between whites and blacks, when both nominally enjoy equal rights in the government, and when one state has a majority of whites, while three-fifths of its neighbor's population may be black; when, too, such a black majority of men entitled to vote had either recently been the

slaves of the white minority, or were the sons of those who had been in servitude.

No such problem has ever before been presented in the history of the world. There have been plenty of cases where one race has invaded the territory of another, and the two have thereafter lived on the same soil ; but there has never been an instance where the two races have thus lived under a democratic form of government, in which every man was given the suffrage. There has never been an instance, either, in which two races, coming together under anything even remotely approaching the conditions of this republic, have been sharply separated by the color of the skin, and where color prejudice has prevented the amalgamation through intermarriage which, for example, blended Saxons and Normans in England during the twelfth century.

It is both humorous and pathetic to recall the cheerful confidence with which, after the fall of the Southern Confederacy, the Republican party of the North, then in the height of its power and firmly intrenched in the public confidence, approached the solution of the problem in the unprecedented form which it then presented. Slavery had been abolished, and an amendment to the Constitution provided that it should never again exist within the United States. Enfranchisement seemed the corollary to emancipation, and why should not negro suffrage be made as sure as negro freedom, by the simple device of amending the Constitution still further ?

Looking back, we can now see that the adoption of the policy embodied in the fourteenth and fifteenth amendments to the Constitution was inevitable, under the conditions which existed between 1865 and 1870. Two motives conspired to this end, either one of which was powerful enough in itself. The North had been reared in immense respect for the ballot. One after another of the early restrictions upon the exercise of the suffrage, ecclesiastical, pecuniary, and educational, had disappeared, until by 1860 any white citizen of a state in that section (and in some

commonwealths also the few blacks) could vote, save for a property bar in Rhode Island and a reading and writing test in Massachusetts. Manhood suffrage had worked so well, as a rule, despite occasional difficulties from the "foreign element" in New York and some other large cities, that it naturally seemed to most persons an easy and simple cure-all for any complaint in the body politic. People bred in such conceptions of voting by white men in the North were bound to believe that negro suffrage in the South would not only set the just-enfranchised blacks on their feet, but would also enable them to secure all of their rights.

Political considerations reinforced this argument, and converted those hesitating members of the dominant party who reflected that manhood suffrage in the North had meant the rule of voters who were intelligent, while the late slaves were, for the most part, as ignorant of the science of government as brutes. The Republicans had controlled the national government since Lincoln's inauguration in 1861, but, even with the South unrepresented in Congress, the Democrats had the next year reduced the Republican majority in the House to disagreeably small proportions, while in 1864 they had carried New Jersey, and had come near getting also the electoral votes of New York, Connecticut, and Oregon. If only whites were to vote in the South, and if the whites were again to support the Democratic party as generally as they had done before the war, there would be great danger that the Republicans would lose the country in the early future. On the other hand, with the leaders among the whites disfranchised for their support of the Confederacy, it seemed plain that giving the suffrage to the blacks would make that section almost solidly Republican,—for, of course, the blacks, out of gratitude, would vote for the party which had both emancipated and enfranchised them. With negro suffrage, the Republican party would be sure to control the government of the nation indefinitely; anybody could see that who would do a little figuring. And there were already plenty of good men who believed that the mainte-

nance of the Republican party in power was essential to the preservation of our institutions.

It seems now incredible that statesmen could ever have believed that the bottom rail should be put on top, or that politicians could have supposed that, once put there, it could be kept in that position. No such preposterous experiment in government was ever seen in a civilized state as the committal of power over its intelligence and property to an ignorant race which, less than ten years before, had been in slavery. The topsy-turvy arrangement lasted only long enough to infuriate the despoiled and humiliated whites to the pitch of revolt. Within a few years, by force or by fraud, the blacks had been pushed out of power, even in such states as South Carolina and Mississippi, where they greatly outnumbered the whites. Earnest attempts were made by the Republican party to stay the political transformation of the South into a "Democratic stronghold," for the second time. The whole influence of the Federal government was exerted to save the carpet-baggers, and the United States army was, for a while, used to prop up state governments which could not stand by themselves. But all was of no avail. Within a decade after suffrage was given to the blacks, they had lost control of every state, and there was a "Solid South" for the opposition party.

It was a revolution which had wrought this most unexpected change. It had involved a resort to "bull-dozing" and to cheating on the part of the whites. So long as laws and constitutions remained unchanged, force and fraud on that side would be necessary, whenever and wherever the blacks should take a notion to vote of their own accord, or white adventurers should try to organize them as a political body. The conservative and thoughtful elements among the whites saw that such a remedy was almost as bad as the disease, while it never cured the complaint. They set out to procure the practical disfranchisement of the blacks under the forms of law. It seemed a hopeless attempt. In the first place, there was the Federal Constitution

in the way, prohibiting any interference with the suffrage on the ground of race or color, whereas the whites sought to take the ballot from the black race. In the second place, the express condition had been imposed by Congress, when it readmitted the Southern states during the reconstruction era, that they should not disturb the suffrage settlement; in the case of Mississippi, for example, that its Constitution should "never be so amended or changed as to deprive any citizen, or class of citizens, of the right to vote, who are entitled to vote by the Constitution herein recognized." In the third place, there was a Supreme Court at Washington composed mostly of Republican judges, not to speak of a Republican President and Congress, when Mississippi, in 1890, called a convention to make a new Constitution which should virtually deprive the blacks of their right to vote.

The task set before this body was to construct a suffrage system which should on its face apply equally to all, but which in practice would operate to exclude an entire class. The negroes are migratory, thriftless, and ignorant. A strict registration of voters would rule out a large number of blacks, without serious inconvenience to the whites. The requirement that a poll tax must be paid, before a ballot could be cast, would make a still larger number of blacks lose all interest in elections. An educational test would prove an insuperable bar to most of those who could meet the registration and tax conditions. There were, however, a good many whites who could not read, but whom their neighbors would not want disfranchised. For their benefit, an ingenious alternative was devised, the educational condition being that a voter must be able either to read the Constitution, or to understand it when read to him. This system went into operation ten years ago. Under its workings only a few thousands of negroes have ever exercised the suffrage, while there have been no complaints that whites can not vote.

This was an open attempt to "get around" the Constitution. Republicans predicted that the Supreme Court of the United

States would make short work of it. In due course of time, a case involving the constitutionality of the new Mississippi plan was carried before that tribunal. The issue was presented in the clearest possible manner. The Supreme Court of the state, in passing upon the question on its way from the local court to the final authority, had expressly said that the convention which framed the Constitution of 1890 "swept the field of expedients to obstruct the exercise of suffrage by the negro race," making the migratory habits and thriftless nature of the blacks operate to disqualify them. But the state court maintained that, so long as there was no discrimination in terms against any race, the fact that the expedients employed might work almost exclusively against one race, did not make it a violation of the Federal Constitution. The Supreme Court of the United States quoted this reasoning only to endorse it, and sustained the Mississippi Constitution as not in conflict with the fifteenth amendment. As for the condition by which Congress, thirty years ago, attempted to restrict the freedom of certain states to change their fundamental law, it falls of its own weight. All states in the Union must have equal rights in this respect, as in every other.

An easy way to eliminate the vote of the blacks has thus been devised. South Carolina, which, next to Mississippi, has the largest proportion of negroes to the whole population, was the first to follow her example. Louisiana, where the two races are almost equal in numbers, came third, but introduced a new form of discrimination which eminent lawyers believe will not pass the Supreme Court at Washington. A provision has been put in its new Constitution that anybody who can not pass the educational test may still vote, if he were himself a voter, or his father were a voter, in 1867, when no black man exercised the suffrage in Louisiana. North Carolina has also framed a similar amendment to its Constitution, which will be passed upon at the polls next summer. Even if this scheme be annulled, however, the Mississippi plan practically serves the same purpose, and it

could still be taken up by other states. The black vote can be got rid of easily enough under the forms of law.

The Republican party has repeatedly attempted to stay the progress of this revolution. Control of Southern elections by the national authorities seemed the obvious weapon to employ. Federal election laws, nominally for the whole nation, but really designed for application in the South alone, had early been passed. When the process of eliminating the colored vote still went on, under the statutes which the Republican managers had enacted in reconstruction days, the more radical, naturally enough, proposed a "Force Bill," in the middle of Grant's second term, but were defeated by a moderate element in the party. Fifteen years later, another desperate attempt was made by a Republican administration to push through Congress a similar measure, and with success in the lower House. An intrigue between some Republican senators and the Democrats defeated it in the upper branch. The revival of Democracy, resulting in the brief control of both the Senate and the House as well as the Presidency after the election of 1892, enabled that party to repeal the election laws which still survived. Since then, for the first time since the restoration of the South to the Union, there has been nothing to distinguish that section from the rest of the country, in the attitude of the national government toward its elections.

The generation which sincerely believed in Federal interference with Southern voting has so nearly disappeared that it wields no influence. Its successor doubts alike the wisdom of such meddling and the political profit of it. The opposition of the Republicans in Congress to the repeal of the Federal election laws in 1894 was perfunctory and half-hearted. The very next Congressional election showed that the change had helped the party in the old "border states," and in 1896 it carried more than one state in the lately "Solid South," largely because the Democrats had lost the old sectional issue which had served them so long and so well. The first Congress under President McKinley's administra-

tion passed without a suggestion of reviving those laws, from either the President or any other Republican leader. No serious movement in this direction is likely during the Fifty-Sixth Congress.

It would be "bad politics" for the McKinley administration to revive the sectional issue at this late day. The President knows that the identification of Mr. Harrison with the Force Bill of 1890 was an important element in his party's overthrow in 1892. He himself remembers that he carried Southern states in the Presidential election of 1896, which had gone Democratic over and over again, when Republican administrations tried to carry them through the aid of Federal election laws. He knows that nothing would discourage the Republicans of Maryland, West Virginia, Kentucky, and Missouri in the contest of 1900 so much as the knowledge that the opposition might again raise the sectional cry, to rally the now divided white voters for Democracy. As the shrewdest of politicians, Mr. McKinley must realize that no policy could be worse than to revive in 1900 an issue which brought only disaster to his party ten years earlier.

A new suggestion has been broached of late years,—that, even if the nation can not effectively protect the Southern blacks in exercising the suffrage, it can prevent the Southern whites from profiting, as a race and a party, by the suppression of the negro vote. It is pointed out that Mississippi, a Southern state with a black majority, casts only about a tenth as many ballots, in one of its utterly one-sided elections, as does the Northern state of Minnesota, in one of its close contests, with the same number of men old enough to vote. It is urged that it is grossly unfair for the Southern commonwealth to have as many representatives in Congress, and as many votes in the Electoral College, as the Northern. The fourteenth amendment provides that, when the right to vote is denied to any male citizens of a state, over twenty-one years of age, or is in any way abridged except for

participation in rebellion or other crime, its basis of representation shall be reduced in the proportion which the number of such male citizens shall bear to the whole number. If only a few thousand negroes are allowed to vote in Mississippi, why should the state not lose the four of its seven representatives which stand for the negro element in its population ?

It seems a plausible claim, but it will not endure scrutiny. Few blacks vote in Mississippi, it is true, but few whites vote, either. The whites generally refrain from voting because they do not feel interest enough in the elections to register, pay their taxes, and go to the polls. The same motives account for much of the black indifference. Few negroes care enough about casting a ballot to pay two dollars for the privilege, or to refrain from moving into another county just before election day, if the fancy strikes them, at the loss of a voting residence. Even of those who can pass the educational test, a large proportion have concluded that for the present neither they nor their race can gain anything by exercising the suffrage. The Supreme Court has sustained the lawfulness of such restrictions upon voting as the Mississippi Constitution imposes, and it would be impossible to show that the restricted right to vote thus allowed is denied to any considerable number of blacks, as blacks.

Beyond this legal difficulty lies a still more serious moral obstacle for those who would have the representation of the South reduced, because at present the blacks generally do not vote. This obstacle is the final conclusion of the North that the race began voting too soon, and on a wrong basis, and that it had better take a fresh start on other lines. It is recognized that the bulk of the blacks are still too ignorant and backward to make it well for their states that they should vote, and nobody can seriously argue that what would be bad for a state, would be good for the nation of which it is a part. The most that can be urged is, that, if black ignorance could vote one ticket in the South, it would offset the white ignorance which votes the other ticket in the North. But

the very people who say this admit that New York, Chicago, and other Northern cities suffer from ignorant white voting, and they must shrink from inflicting similar evils upon the South by insisting upon ignorant black voting there. No party could ever afford to "go before the country" on that issue, even if there were, as there is not, any practicable way of making it.

The Southern question as an issue in national politics is thus gone. But as a problem in the relations upon which two races shall live together in a large section of the Union, it goes over into the next century. Its present phase is perhaps the most anomalous of all. Theoretically, the blacks enjoy equal rights with the whites, and everything which can be done by the nation to establish them in these rights has been done. Practically, they are still a subject race. The Constitutions under which they live, even where they are largely in the majority, are framed by the whites. The laws by which they are punished are enacted and administered by the whites. Nearly all of the blacks till the soil, and the land is almost entirely owned by the whites. The older members of the dominant race still recall the period when the blacks were despised as slaves, while the younger ones have been reared to regard them as inferiors. The prejudice against inter-marriage is so strong that it is prohibited by law throughout the South. The feeling against anything which savors, however remotely, of "social equality," has led some states to forbid the use of the same railroad car by the two races.

The nearest approach which has ever been seen, elsewhere in the Union, to this hostile attitude of two races in the same state, was the feeling of the Yankees in New England toward the Irish, when the tide of immigration began setting strongly this way fifty years ago. The descendants of the Puritans had a hearty contempt for the immigrants. They considered the religion of their new neighbors as little better than idolatry. They disliked the sight of the priest, and questioned the propriety of the convent. They dreaded the political influence of ignorant

voters who were devoted to "Popery." In short, they regarded the Irish as in every way inferior to themselves, and they did not conceal their contempt. The idea that a Roman Catholic Irishman might sometime be mayor of their metropolis would have seemed to them intolerable.

The problem presented in the middle of this century by the flood of foreign immigration in the North,—for this movement was confined to the North,—was, indeed, novel and serious. Previously the population had been homogeneous; its standards were essentially the same. Suddenly there was plumped into all of the large cities a great mass of people, of a different race, a different religion, and a different education. The existing institutions had not been framed for such an emergency. Many thoughtful persons doubted whether our system of government could be maintained in a city where this new class of voters should become a large, and perhaps a controlling, element. The more reckless were ready for violence against "the Paddies." Numerous schemes were proposed to meet the evil,—from burning convents to amending the Constitution so as to restrict, and even almost prohibit, the exercise of the suffrage by men who had been born abroad.

The problem presented half a century ago has not yet been solved. Boston still suffers from the load of ignorance, poverty, and crime which a foreign immigration, coming now from all countries of Europe as well as from Ireland, has dumped upon it. New York, Chicago, and many other large cities suffer in the same way. All sorts of experiments have been tried. One thing, and one only, has been determined. This is, that outsiders could not settle the question. The foreign element has been confined to the North; except for German colonies in Texas, hardly an immigrant settled between the Potomac and the Rio Grande. The people of the South were interested in this new problem, but they could not deal with it wisely, from the very nature of the case. For them it was a matter of theory, of speculation, of

academic discussion. To the people of the North, on the other hand, it was a present fact, an actual situation. They understood, or at least they could study on the spot, its various and conflicting ingredients. The wisest statesman of the South, if the matter could have been left to him, would have been less fitted to deal with a thing so remote from his daily experience than the average citizen of the North, who had it constantly under his eye. A solution framed in the South which was offensive to the North would never have been accepted, nor long endured, if thrust upon it against its will.

The North, apparently, has at last learned the same lesson regarding the negro problem at the South. For thirty years it has tried to regulate the matter from the outside. It has assumed to know what ought to be done, and how to do it. It has framed Constitutions under which the South was to live, and it has attempted to debar that section from ever changing the suffrage provisions of those Constitutions. It has complacently decided in its wisdom that every black, however ignorant or thriftless, ought to vote, and it has attempted to see that every ballot so cast should be counted. At last, the whole scheme has broken down, and the North appears to understand that it had better wash its hands of the whole business.

The wisest friends of the blacks,—Northern men, who, as soldiers in the Union army, had helped to emancipate them, and then, as teachers and advisers, had helped to educate them,—were the first to perceive and confess that the “hands off” policy was the only one to adopt. As long as a dozen years ago, the ablest representative of this class, Gen. S. C. Armstrong, the founder of the Hampton (Va.) Institute, declared against all further attempts on the part of the North at either coddling the blacks or hampering the whites. He opposed alike Federal Election Laws, designed and administered in the interest of the blacks, and Federal Education Laws, appropriating money for the South in the same interest. He urged that a negro could never

become an ordinary citizen until he should cease to be "the ward of the nation." He would have the blacks, poor, ignorant and despised, though they were, left to depend, for the very schooling which he thought absolutely essential, upon the provision which should be voluntarily made for them by the race that must pay the most of the taxes, being convinced that this would be better for both races than to have the nation relieve the whites of the burden.

Mr. Booker T. Washington, a black pupil of General Armstrong at Hampton, who has become the most prominent leader of his race, takes essentially the same view. General Armstrong did not regard it as a serious misfortune for the negro that he was discouraged, and even prevented, from voting. He condemned unfair methods, but he believed that the cure of such methods might and should be left to local public sentiment. Mr. Washington opposes unjust race legislation, like the recent proposition in Georgia to disfranchise the black man, as a black man; but he does not urge the negroes in his own State of Alabama to make voting the chief end of life. The key-note of the advice given by both of these leaders to the negro always has been to make himself a good citizen, worthy to share in the government of town, state, and republic, and trust to his white neighbor to recognize his right to such share when that time should come. Be a voter, and then think about being a man,—that was long the only watchword of the Northern Republican politician for the negro. Be a man, and then think about being a voter,—such is the message to him from the Armstrongs and the Washingtons.

The one thing which no candid student of the Southern question to-day will do, is to predict its outcome. A long line of prophets, many of them men of high authority in their day, have been utterly confounded by the event. The present situation in the South is so utterly different from what was anticipated, thirty years ago, that the boldest may well shrink from forecasting the

state of things thirty, sixty, a hundred years hence. It is a question which everybody now sees that the whites and blacks must settle among themselves. There is no approach to unanimity among the whites as to their line of action. Veteran political leaders, like Senator Morgan of Alabama, openly favor taking the ballot from every black man, however well-to-do or intelligent, on the ground that no member of so inferior a race should ever be trusted with any share in the government. On the other hand, whites belonging to Senator Morgan's party already encourage the participation in local elections, which come home most closely to them, of blacks who are intelligent and sensible tax-payers.

It is easy enough to make a catalogue of outrage and injustice upon the Southern blacks, so long and gloomy as to justify a feeling of profound discouragement regarding the future. The most hopeful feature of the situation is the fact that those friends and champions of the negro who have studied the question most carefully upon the spot, have grown more confident all the time that ultimately things would work out right. General Armstrong died full of faith in the future. Mr. Washington grows more hopeful every year. Outsiders may well feel that there is no occasion for despair, when the voice of cheer is heard from the very heart of "the black belt."

In the last analysis, this whole question is simply whether the principles of democracy can be applied successfully to races of different colors occupying the same section. There have always been those who believed that each fresh extension of these principles in the North was sure to work ruin. Massachusetts did away with the property qualification for the suffrage in 1820. The conservative element earnestly opposed the change, on the ground that it would put both private property and public credit at the mercy of demagogues. The apprehension of such financial disaster grew, as immigration brought into the state a host of foreigners, who became voters without, in the common phrase,

"having any stake in the community," any pride in the traditions of the commonwealth, any realization of the value of a high financial reputation. Yet, during the Civil War, this same Massachusetts, where the poor man could vote, paid the interest on her bonds in gold, when it cost twice and nearly three times as much as greenbacks, without any legal compulsion, and simply as a matter of pride and honor. Since that time, nobody in Massachusetts has maintained that a property qualification for the suffrage is essential to a state's credit.

Toward the close of his life, James Russell Lowell attended a public dinner in Boston, at which Hugh O'Brien, a native of Ireland and a devout Roman Catholic, then mayor of the city, was greeted with enthusiastic applause from distinguished citizens of both parties, representing the best native stock. Mr. Lowell spoke of the vast changes which may happen during one man's lifetime, and furnished this impressive illustration: "I can not help alluding to one thing, to show how rapidly changes are brought about, and it has been suggested to me as I sat here to-night. I remember very well the Broad Street riots, the burning of the convent, the mobbing of the Montgomery Guard, and I have lived to have the pleasure of sitting at the same table with an Irish Roman Catholic Mayor of Boston. You will be yourselves the judges that I shall not touch upon politics, but he has, I am sure, received the commendation of both parties. I merely mention this to show what great changes can take place in the life of one man."

Not less great has been the transformation wrought, when, in a city where the slave pen and the auction block existed, less than forty years ago, the white Democratic Mayor of New Orleans at a public meeting pays honor to Booker T. Washington, as a man who is accomplishing what "is destined to work a moral revolution in the republic."

We have been forced to leave the Southern Question to the South. We may feel that it can safely be left there, when the South has its Mayor Flowers, as well as its Senator Morgans.

THE INSTITUTION OF SOCIETY

LINDLEY M. KEASBEY, *Bryn-Mawr.*



FTER centuries of speculation on the subject, Society is as much a mystery as ever. Our knowledge of the universe notwithstanding, we live and move and have our being in the midst of a social world, of whose laws we have but an inkling and whose purposes we but dimly divine. Science

has enlightened nearly every other path, but we are still groping about for a satisfactory point of departure from which to explain the complex of collective phenomena.

It was easier for the philosophers of the last century, because all were then agreed that Society was to be "rightly constituted by victorious analysis." But Philosophism is dead, and Positivism now claims its right to rule in the domain of social science. Doctrinaires no longer hope to reconstruct society upon a fabulous state of nature; scientists are seeking, instead, to discover the laws of social evolution.

THE RATIONALISTS.

With this latter end in view, Mill sought "some one element in the complex existence of social man, preëminent over all others as the prime agent of the social movement," and from the accumulated evidence concluded, "that the order of human progression in all respects will mainly depend on the order of progression in the intellectual convictions of mankind¹";—or,

(1) J. Stuart Mill, *Logic*, bk. vi. chap. x. § 7.

to put it more concisely, in the language of Lewes", the evolutions of Humanity correspond with the evolutions of Thought." Comte likewise believed "the intellectual evolution" to be the "preponderant principle" of social growth, and, taking the point of departure of the individual to be also that of the race, regarded the history of society as governed by the history of the human mind¹.

The concept is certainly attractive, but scarcely definite enough to satisfy science. Without doubt, the evolutions of humanity do, in a way, correspond to the evolutions of thought, and it is well enough for this reason to take the speculative faculties of mankind as "the natural guide to the historical study of humanity"; but unless the mental development of the human race be considered as predetermined in its course, it is obviously impossible to regard the intellect as the "prime agent of the social movement governing the history of society." By following the order of progression in the intellectual convictions of mankind we may, perhaps, classify the periods of the past and analyze the conditions of the present, but as we can not calculate upon a constant curve of development, it is evidently futile to attempt to prewise the future from this point of departure².

THE BIOLOGISTS.

In justice to the rationalists there is this much, however, to be said: they were the first to emphasize the development of society, and to consider social evolution as subject to natural laws. Taking this as their starting point, biologists have since proceeded by a short cut to the formulation of these social laws in terms of the animal world. The most "evolved organic aggregates" are found to be coördinated on their psychic side with their fellows, and thus "by insensible steps out of the organic" there is

(1) *Positive Philosophy*, Bohn's Edition, vol. i. p. 3; vol. ii. p. 307.

(2) How futile may best be judged from Mr. Crozier's recent work on *The History of Intellectual Development*.

presumed to proceed what Spencer aptly calls "superorganic evolution." According to this hypothesis, social progression is considered as a simple continuation of the evolutionary process, and society has the similitudes at least of an animal organism.

The general applicability of the doctrine of evolution to social progress can scarcely be called into question, but this is very far from affirming that the problems peculiar to society are to be elucidated by the biological analogy. Suppose (to borrow Spencer's terms) one's speculative audacity be sufficient; the productive industries of society may then, perhaps, be pictured as "the sustaining system," and likened to the parts carrying on alimentation in a living body; with a similar stretch of the imagination, one may speak of trade and commerce as vascular activities, and include them under "the distributing system"; it is even possible to regard political force as social nervo-motor energy, and to call the governmental military apparatus "the regulating system." Society, like the metazoa, would then consist (to put it in Huxley's terminology) of an endoderm, a mesoderm, and an ectoderm. And if, as Spencer insists, progress is from militarism toward industrialism, the social endoderm must be all the while increasing at the expense of its ectoderm. To continue the analogy, civilization is coming, accordingly, to assume the form of a complicated gastro-vascular cavity, an idealized social stomach sac, as it were! Surely science should have something better than this to substitute for the philosophers' perfect state.

THE GEOGRAPHERS.

But in spite of the incongruities of their conclusions, the biologists have at least succeeded in opening a path through the antecedent sciences toward a proper study of distinctly social problems. Society may henceforth be regarded as a natural phenomenon, and no longer as Carlyle conceived it, "the standing miracle of this world." This is certainly an advance over philosophism, but still not positive enough to serve any scientific end. The collective activities of man have still to be specially

accounted for ; the principles peculiar to social progression have yet to be discovered.

Certain geographers, regarding the problem from the objective side, and taking their key from biology, have endeavored to explain social phenomena directly from the physical environment. "Tell me the geography of a country," as Victor Cousin said, "and I will tell you its future." This is quite true. Given any social entity, the manner of its growth will undoubtedly be determined by the nature of its habitat. Superorganic evolution is, in other words, as dependent as organic evolution upon environing agencies. Thus Montesquieu was able to refer the institution of slavery to climatic causes, and Buckle rightly related the habits of national thought to the influences of "climate, food, soil, and the general aspects of nature." But to describe the curve of development of certain social units is not to account for the origin of society. The objective or physical factors must at best be passive, and can not possibly afford the original impulse toward collective life. The environment may thus be taken as the condition, but not as the cause of sociality ; outer nature may determine the form, but can not account for the fact of society.

THE PSYCHOLOGISTS.

As psychic factors alone can actively make for socialization, the initiative must proceed primarily from the subjective side. The original motives of collective life should consequently be sought, not in the peculiar character of the environment, but in the individual instincts of the man. This is the position of the social psychologists, but accurate as it is, there is, unfortunately, nothing in the analysis to suggest the particular proclivities of the human being that conduce thus to sociality.

Aristotle began beyond the difficulty by categorically declaring that "man is by nature a political animal¹"; and Darwin also

(1) *Politics*, i. 2-9.

took it as an axiom, that "man is a social being¹." Of modern man this may no doubt be said, but the personal proclivities of the civilized individual are so largely the result of historical inheritance and the social *milieu*, that he can scarcely be taken as an example of the original type. Anthropologists tell us, on the other hand, that our ape-like progenitors probably lived, like their nearest simian relatives to-day, in detached family groups, and not in societies at all. We know, too, from ethnology that savages still exist who are totally unacquainted with anything beyond domestic organization. To say, then, that man is by nature either social or political, is purely gratuitous; the most that can be affirmed is, that human beings have in the course of time come to inherit certain characteristics that now-a-days make for collective life.

But if not original, whence were these social instincts acquired? From conflict, Professor Gumpłowicz replies,—and therewith we revert to Hobbes; through contract, Dr. De Greef answers,—and this carries us back to Locke and Rousseau. M. Gabriel Tarde, on the other hand, takes imitation to be the elementary psychic fact of society; but this affords us no answer, as it is the original, and not the copy we are seeking. To Mr. Giddings, finally, all the above explanations seem unsatisfactory. He suggests² as the psychic cause of social phenomena, the "consciousness of kind," that is, "the state of consciousness in which any being, whether low or high in the scale of life, recognizes another conscious being as of like kind with itself." But, this author adds, to become conscious of such similarity, individuals must first be brought together. We are apparently to think of socialization, therefore, not as the original psychic factor of civilization, but as a resulting mental process, "as the development of a social nature or character,—a social state of mind,—in

(1) *Descent of Man*, p. 37.

(2) See Giddings' *Principles of Sociology*, and *Theory of Socialization*.

the individuals who associate." Socialization must be regarded accordingly "as an *effect* of association," and only as "a cause of the developed *forms* of association." Obviously, then, we have not yet reached the root of the matter. Aggregation and association both precede society; and, according to Mr. Giddings, the individual must first make "some progress in appreciation, in utilization, and in characterization before he can occupy his mind with socialization." Thus, even granting the efficacy of consciousness of kind in elaborating the developed forms of association, and admitting the truth of Mr. Giddings' "propositions about the reactions of association and of the consciousness of kind upon individual motives, conduct and character," we have still to seek the psychic antecedents of society. In short, psychology has thus far failed to afford us a satisfactory analysis of the "individual impulsions which make up the progressive force of the human race¹"; science has still to hit upon the "one element in the complex existence of social man, preëminent over all others as the prime agent of the social movement²."

Though none of the foregoing explanations is of itself sufficient to account for the complex of collective life, still by combining the results of the various theories we are at least brought within reasonable reach of an adequate point of departure for a study of the primary problems of society. To gain common ground, let this, then, be said of the coming science of sociology: it deals with superorganic phenomena, and is, therefore, subsequent to biology, which concerns itself exclusively with the evolution of organic life; like its antecedent science, its conclusions are always conditioned by objective factors, but beginning as it must with psychic motives, its primary problems are only to be approached from the subjective side. Taking its essentials from biology,

(1) Comte, *loc. cit.*, vol. ii. p. 227.

(2) Mill, *loc. cit.*

geography, and psychology, the new science must, consequently, proceed by some heretofore unformulated process of ratiocination and consolidate them into a distinctly sociological hypothesis. But for this some guiding principle is required. The immediate demand is, accordingly, for a term that shall prove broad enough to include both the internal and external factors of society, and, at the same time, sufficiently fine to connect superorganic with organic evolution. What is it then that joins, and therewith also separates, the collective activities of man from similar phenomena occurring in the animal world ?

THE ECONOMIC CRITERION.

My answer is ECONOMICS. But before attempting to prove the point, let me first lead up to my line of argument, and so exhibit the verisimilitude of the hypothesis.

Taking self-seeking,—or better put, self-saving,—as the essence of economics, we certainly find something here that seems to separate human life from animal activity. Ingenuity is to be distinguished from instinct by this criterion, and man is thus placed upon a psychic plane above the lower orders. Not that animals are not also economic. On the contrary; there are some species—witness, for example, the insectivora—which come very close to human beings in this respect. All I mean to affirm is, that in the conscious application of the “waste-not-want-not” principle, there are no animals which can be placed in the same category with man; for, so far as I am aware, he is the only creature that intelligently reckons ahead and consciously counts in utilitarian terms. This is why I am of the opinion that economics may be taken in its subjective sense to connect, and therewith also to separate, the human being from the animal world.

The correlation is equally obvious on the objective side. It is an axiom of biology, that animals are adapted to their environment, and this of course applies to man as well as to beast. But there is this difference to be noted: while animals are

passively adapted, human beings actively adapt themselves ; where beasts are fitted for their habitat, man consciously conforms to his conditions. In both cases it is the character of the food-supply which causes the necessary modifications ; but while animals usually live upon what they can find, men, for the most part, find what they can live upon. In order to bring out the distinction, I should prefer to put it, then, in this way : it is the physical environment that determines the nature of the beast, but the economic environment which occasions the character of the man. Outer nature acts differently, in short, upon instinct and ingenuity, tending to fix the former, and constantly to encourage the latter. Thus, though subject to the same general conditions in his struggle for existence, man differs from the lower orders in this : that in his case the environment offers limitless opportunities of economic change.

In passing from zoölogy to anthropology, we enter an economic realm, not marked off, it is true, from preceding fields of research, but connected on both subjective and objective sides by converging pathways leading from the animal world. Having proceeded thus far, curiosity should compel us to continue our course ; for, from the looks of things, it would appear as though the same road led through anthropology and out of biology entirely into the undiscovered domain of sociology. Suppose, then, we set out on the presumption that superorganic evolution proceeds out of the organic world, by "insensible steps," if you will, but at all events along a distinctly marked economic line. If this is the right path, then sociology must border upon biology, precisely as anthropology is connected with zoölogy, on its subjective side by economic psychology, and on its objective side by economic geography. Such, at any rate, is the opinion I have arrived at, after a preliminary survey of the ground ; and though I can not promise to lead the reader very far along the road in this brief essay, I will at all events endeavor to bring him to a vantage ground and point out the general lay of the land.

ECONOMIC PSYCHOLOGY.

Let us first follow the subjective signs, and see to what conclusions we come along the line of economic psychology.

(1) *Hunger*.—Regarding man simply as an organic product of the evolutionary process, it is certainly permissible to endow the human animal with the instinct of self preservation. This much at least we may borrow from biology. And, inasmuch as nutrition is the original requisite of survival, it is evidently the feeling of *Hunger* that first brings man into conscious contact with the external world. Were the food-supply superabundant, there would of course be no economic problem involved. Under the natural order of things, however, the human being is everywhere obliged to work for his living, and this in itself involves a certain sacrifice. Not that the individual is actually loath to labor for his daily bread, but he is at least inclined to consider the cost, and out of such calculations utilitarian motives naturally arise. Hunger makes, in short, for self-sufficiency, and in an environment where few goods are free, the food-quest soon puts man in an economic frame of mind.

(2) *Love*.—But to preserve the individual is not necessarily to continue the kind, which is, after all, the main object of the evolutionary process. Only among creatures that survive through multiplicity of births is the instinct of self-preservation, or the sense of hunger, all that is economically necessary for the maintenance of the species. This is true because in such cases subtraction of parental substance usually takes the place of parental solicitude in the generative process. Certain parasitic crustaceans, for example, die during the procreative period, but they do so in absorbing nutriment for themselves. The cod, on the other hand, produces millions of eggs without limiting its individual life in the least. But whether serious or slight, the subtraction necessary for reproduction is, in all such cases, physical rather than psychic, and that is why, among these lower orders of life, the pursuit of individual satisfaction provides of itself for the preservation of the species.

It is very different, however, with creatures that survive through paucity of births. Under such conditions some subsequent care of the offspring is obviously necessary to keep down the death rate, and this, in turn, involves a sacrifice of individual satisfaction on the part of the parents. In these cases, therefore, the instinct of self-preservation is not enough in itself to provide for the maintenance of the species; an instinct of kind-preservation must likewise enter in, to compel the adults to subordinate their personal desires to the welfare of their young. Instead of physical subtraction, reproduction under such circumstances requires psychic sacrifice; or to put it in plainer language, in all such cases, the sense of hunger must be made subservient to the emotion of love.

Among the higher vertebrates, where paucity of births is the rule, provision is made for the progeny in a variety of ways, according to the nature of the food-supply and the ability of the offspring to take care of themselves. The females of some species assume the entire responsibility of rearing their young to the age of independence, either individually, as is the rule among most mammals, or in coöperation with other females, as is somewhat exceptionally the case with walruses, elephants, bison, and bats. Under such circumstances parental affection is one-sided and maternal love is all. There are also isolated instances of males taking charge of the offspring, but these constitute no precedent. Among other species, birds for example, the male and female enter into partnership for the preservation of the progeny. And if, as is the case with the higher apes, the period of infancy be protracted, such marital unions may become relatively lasting. It is under these latter auspices that paternal love is born and parental affection begins upon its normal development.

It was well enough for Plato, whose wish was to illustrate what he considered the perfect relation between the sexes, to

draw his analogy at random from the animal world,—what though his conclusions led him, by implication at least, to idealize a dog's life. But biology has established her categories since Plato's time, and man is now classed among the primates at the end of the anthropoid line. Thus, whatever the effects of subsequent civilization, in his natural state at least, the human being is subject to just such marital regulations as are imposed upon creatures of his kind by the struggle for existence. Paucity of births is universal among the primates, and, as is the case among man's nearest anthropoid relatives, the Simians, the human species can only be maintained by protecting the progeny during a protracted period of infancy. The human young constitute, accordingly, a dependent class; and, to a lesser extent, this is likewise true of the females, for motherhood seriously interferes with woman's efficiency as a food-getter. The maintenance of human kind consequently casts an extra economic responsibility upon the adults, and primarily upon the males, to provide nutriment for the offspring, until they can find food for themselves. To meet this specific demand, the instinct of kind-preservation is reflected in human consciousness as marital and parental *Love*, which urges the adults of both sexes to labor in partnership for others as much, nay more, than they would be willing as individuals to work for themselves. "Wherein," says the thoughtful Locke, "one can not but admire the wisdom of the great Creator, who, having given to man an ability to lay up for the future as well as supply the present necessity, hath made it necessary that society of man and wife should be more lasting than of male and female amongst other creatures, that so their industry might be encouraged, and their interest better united, to make provision and lay up goods for their common issue, which uncertain mixture, or easy and frequent solutions of conjugal society, would mightily disturb¹."

(1) John Locke, *Two Treatises of Government*, bk. ii. chap. vii. §80.

Being a condition precedent to the survival of the human race, the family may, accordingly, be considered as an original institution. In an economic sense, it is, as Aristotle conceived it, "the association established by nature for the supply of men's everyday wants," because "there must in the first place be a union of those who can not exist without each other; for example, of male and female, that the race may continue; and this is a union which is formed, not of deliberate purpose, but because, in common with other animals and with plants, mankind have a natural desire to leave behind them an image of themselves¹." Hunger, in short, makes, as we have seen, merely for self-satisfaction, and if left alone would undoubtedly lead, in the first instance, to individual production; but in man's case the struggle for existence assigns the ascendancy to love, which naturally demands domestic partnership for its fulfilment. Not that this in any way weakens the dominant utilitarian motives of life, far from it; for to support a family in an adverse environment, the primitive pair must be doubly thrifty. But, inasmuch as love is now found to predominate over hunger, we must change the form of our original statement slightly, and put the final proposition in this way: Man is not naturally an economic individual, but he is by nature a domestic economist.

The sociologist should regard the individual, therefore, as the chemist considers the atom, not as a positive fact, but as a presumed force, never in isolation, but always in some sort of combination. It is, furthermore, with the molecule made up of atoms that both have practically to deal, and the elementary social molecule is evidently the family. What then becomes of the self-seeking economic man who has figured so prominently in the theories of political economy? From the social standpoint, at least, this isolated individual is an abstraction that is false to the facts; for were society a mere mechanical combination of such

(1) Aristotle, *Politics*, i. ii. 2, 5.

discrete units, it could not possibly persist. And if economists err in thus abstracting the individual from his natural surroundings, to serve in their special enquiries, what shall we say of certain political theorists, who would actually found society upon individual contract? The supposition is obviously absurd, unless, perchance, it were possible to proceed from the marriage contract of the original pair.

But admitting man to be by nature a domestic economist, and taking the family in this sense as the elementary social molecule, it would be equally fallacious for us to infer from this that the household is the unit of society. Locke devoted an entire discourse to the refutation of the false principles of the *Patriarcha*, and Rousseau overthrew the learned Sir Robert Filmer's fallacy with a phrase; but the old error has recently cropped out again in another form. Postulating a primitive state of promiscuity, Mr. John Fiske in his "Outlines of Cosmic Philosophy" maintains, that the transition from gregariousness to sociality was caused by the relations of parents to offspring, resulting from the prolongation of infancy, and that social evolution originated in the permanent family¹. The theory, as thus set forth, contains a false assumption, a statement of fact, and an unwarranted inference.

According to Mr. Westermarck, who has made an exhaustive investigation of the subject, "there is not a shred of genuine evidence for the notion that promiscuity ever formed a general stage in the social history of mankind," and, furthermore, "the hypothesis is opposed to all correct ideas we are able to form with regard to the early state of man²."

To deny that in primitive times "all the women were the wives of all the men" in no wise interferes, however, with the truth of the second proposition, that the prolongation of infancy led to the institution of human marriage, and established the first form of the

(1) John Fiske, *Outlines of Cosmic Philosophy*, vol. ii. pp. 340-363.

(2) Westermarck, *History of Human Marriage*, pp. 133, 540.

family. But unless we are willing at this point to accept domesticity as synonymous with sociality, and to interchange our terms, we are no further along than before. True, Rousseau said : "La plus ancienne de toutes les sociétés, et la seule naturelle, est celle de la famille¹," and, following along the same line, Mr. Fiske likewise supposes social development to proceed out of "the reciprocal necessities of behavior among a group of individuals associated for the performance of sexual and parental functions²." But, even in the loosest language, it is scarcely possible to describe a domestic group of this sort, composed of parents and helpless offspring, as in any sense a society. The elementary principles involved in these two forms of association are certainly not identical. Indeed, if we may take Comte as our authority, "domestic relations do not constitute an association at all ; but a *union*, in the full force of the term ; and on account of this close intimacy, the domestic connection is of a totally different nature from the social³." Different in just what way I purpose subsequently to show ; for the present, I shall content myself with demonstrating that primitive man is not naturally social, even in this limited familial sense.

In order to prove that the permanent family grows naturally by genetic aggregation into society, it is obviously necessary to show that filial affection is of itself sufficient to keep the children with their parents after they have reached the age of economic independence. Such was Montesquieu's conception of the matter : "Un fils est né auprès de son père, et il s'y tient : voilà la société et la cause de la société⁴" ; and so also Mr. Fiske argues : "The parents have lived so long in company, that to seek new companionships involves some disturbance of engrained habits ; and mean-

(1) *Contrat Social*, chap. ii.

(2) *Loc. cit.*, ii. p. 360.

(3) *Positive Philosophy*, Bohn Edition, vol. ii. p. 290.

(4) *Lettres Persanes*, 94.

while the older sons are more likely to continue their original association with each other than to establish associations with strangers, since they have common objects to achieve, and common enmities, bequeathed and acquired, with neighboring families¹." But this is taking for granted precisely what it is essential to prove. In the first place, it may be asked, what other companionship there is under such circumstances for the grown-up sons to seek, if not that of some female. And merely because the parents labored in partnership to bring these sons to maturity, is it in any wise necessary for them and their wives to keep up the earlier association, which now has confessedly no further biological reason for existence? Genetic associations of this sort are by no means common to-day, and there is no good psychic reason why they should have been universal in antiquity. Indeed, as far as the facts go, isolation appears to be the rule of primitive life, and beyond the original family group social forces seem at first to be centrifugal rather than centripetal. "All the evidence we possess," says Mr. Westermarck, "tends to show that among our earliest human ancestors the family, not the tribe, formed the nucleus of every social group, and in many cases, was itself perhaps the only social group. * * * The manlike apes are not gregarious, and even now there are savage peoples of the lowest type who live rather in separate families than in tribes²." Among the Mantras of the Malay peninsula, for example, every individual lives as if there were no other person in the world but himself," and "the Abors, as they themselves say, are like tigers, two can not dwell in one den." The wild men of Borneo "do not associate with each other, and their children, when old enough to shift for themselves, usually separate, neither one afterwards thinking of the other"; and so likewise the Esquimaux "live in the most perfect state of independence of each other, * * * the youth, as

(1) *Loc. cit.*, vol. ii. p. 344.

(2) *Loc. cit.*, p. 538.

soon as he is able to build a kaiak and to support himself, no longer observes any family ties, but goes where his fancy takes him." The mountain Snakes, says Schoolcraft, "exist in small detached bodies and single families, and change their locations so widely that they seem to have no particular claim to any portion"; and according to Mr. Bailey, "the Nilgala Veddahs are distributed through their lovely country in small septs or families, occupying generally caves in the rocks, though some have little bark huts. They depend almost solely on hunting for their support, and hold little communication even with each other." The social condition of Brazilian savages is also "of a low type, very little removed, indeed, from that of the brutes living in the same forests, * * * the family is the only tie which joins these rude children of nature with each other. They live without any bond of social union, neither under a republican nor a patriarchal form of government. Even family ties are very loose among them, one family living at a distance from another in a wretched hut composed of boughs¹."

Examples of this sort might be multiplied almost without number, but enough has been said, I think, to show that isolation rather than genetic association is the primitive law of human life. The modern attempt to derive social sentiments directly from filial affection fails, in short, for this simple reason; because the family bond is primarily biological, and consequently exerts but little influence beyond the purely domestic group. Thus, without for the moment going further into the fundamental distinction between domesticity and sociality, the superficial facts are enough in themselves to convince us that primitive man is not primarily social, even in the limited familial sense that Mr. Fiske has in mind. To revert to our original analysis: from the standpoint of economic psychology, all that can be affirmed is, that man

(1) For authorities for these quotations, and also for further list of primitive people living in isolation, see Spencer, *Principles of Sociology*, vol. i. § 35; Westermarck *loc. cit.*, pp. 43-50; Hildebrand, *Recht und Sitte*, pp. 1-4.

is by nature only a domestic creature, and that hunger and love make in the first instance simply for family life.

(3) *Alarm*.—While admitting the force of his adherent's argument, that "the transition from the gregariousness of anthropoid creatures to the sociality of human beings is caused by the relations of parents to offspring," Mr. Spencer himself is rather disposed to take "coöperation in war as the chief cause of social integration¹." This is certainly much nearer the truth, and in its proper place I shall be most willing to accept coöperation as the main motive of socialization. For the present, however, while still engaged upon an analysis of the psychic characteristics of primitive man, I feel called upon to enquire whether there is any innate military instinct that causes people originally to combine.

The life of primitive man is certainly beset with countless perils. Experience has taught but little upon these earlier stages, and almost all phenomena are consequently referred to supernatural agencies. The savage lives in awe of the outer world; witchcraft and sorcery are about the only means at hand to cope with the adverse forces of nature. Religion has its roots in this original feeling of fear; medicine men and mystery men are the earliest priests. But exorcism is in many cases not enough. Against foes whose methods of attack are intelligible, primitive man soon learns to proceed more directly by natural means. There are wild beasts to be slain, noxious creatures to be exterminated, and sometimes human rivals to be laid low. In contests such as these, physical force counts for more than preternatural power, and in the ordinary struggle for existence success usually attends the efforts of the strong. In the minds of the successful, consequently, wrath comes to follow fear, and whenever victory is in any way possible, retaliation takes the place of the original sense of awe. The instincts of self and kind preservation, in

(1) *Principles of Sociology*, vol. i. p. 612; vol. ii. p. 286.

other words, make men apprehensive of danger, and, in case the foe can be combatted, apprehension is usually succeeded by the sense of Alarm,—“a sudden fear or painful suspense excited by an apprehension of danger, which energizes rather than overpowers the mental faculties’.”

With a view to completing our analysis of the psychic characteristics of primitive man, it will be well, therefore, to supplement hunger and love with this original sense of alarm. But it is still a question, whether apprehension of danger causes men in the first instance to combine. I am well aware that in Darwin’s view men were originally a race of weak and mild creatures like chimpanzees, and not a race of strong and ferocious creatures like gorillas, and were accordingly forced to combine because unable to defend themselves singly. But, as Mr. Westermarck adds, it may be doubted whether Mr. Darwin would have drawn this inference, had he taken into consideration the remarkable fact that none of the monkeys most nearly allied to man can be called gregarious creatures. Not only do the ferocious orang-utans and gorillas lead solitary lives; the mild chimpanzees, who more closely resemble human beings in their comparatively slight strength and courage, are also more often found in pairs than in gangs. “It is seldom,” says Dr. Savage, “that more than one or two nests are seen upon the same tree or in the same neighborhood².” It is extremely improbable, therefore, that human beings inherited any coöperative instincts from their ape-like ancestors. Nor, if we may judge from the instances of isolation above set forth, does anything appear to have arisen subsequently in the life of primitive man to call for military coöperation. There was really no necessity for united effort. True, the human being is not, like most of the carnivora, able to defend himself and wreak vengeance upon his foes by the exertion of

(1) *Century Dictionary* under *Alarm*.

(2) Westermarck, *loc. cit.*, p. 42.

mere physical force, but all that he lacks in strength, he more than makes up for in strategy. Then, too, it must be remembered that there are no wild beasts which naturally prey upon fire-making man, and, in the majority of cases, his own offensive warfare upon the animal kingdom can best be waged single-handed and by stealth. Describing the Matimba Pygmy people of the Congo region, with whom he lived so long in captivity, Captain Battel said: "Their food is the flesh of beasts, which they shoot with arrows. Although there is no great fierceness in their characters, they are not afraid to go alone into the woods with no other protection than their poisoned arrows¹." We may take it to be a fact, therefore, that alarm occasioned by animal enemies does not usually cause human beings to combine. It is otherwise, of course, when men wage war upon men; but, Hobbes and Gumpłowicz to the contrary, this is not the natural state. Indeed, the very dispersive tendencies which originally drew families apart were enough in themselves to keep men from coming together in armed conflict; and it is, furthermore, a well-established fact that really primitive people are usually peaceful—witness, for example, the Esquimaux, whose controversies are decided not with blows, but by lengthy word-duels, or debates, in which sarcasm is the most deadly weapon employed. In short, the true savage is not, as Mr. Fiske would have it, an extremely ferocious animal, nor is he, on the other hand, as Darwin suggested, too weak to stand alone. He is rather a self-reliant creature, anxious to get on in the world, perfectly well able to defend his family, and in no wise inclined to join any offensive alliance for the injury of his fellows.

ECONOMIC GEOGRAPHY.

Putting positive statement next to negative criticism, we are apparently upon a paradox. Previously, when objecting to the geographers, the initiative toward socialization was shown to

(1) Walckenaer, *Histoire Générale des Voyages*.

proceed primarily from the subjective side, and for this reason psychic factors were taken to account for the origin of society. But upon further enquiry, there seems to be nothing in the mental make-up of primitive man that calls for collectivity at all. Hunger if left alone would lead to individual production; Love in the ascendant demands nothing beyond domestic partnership for its fulfilment, and Alarm at first occasions no sort of combination among men. It is still true, however, that man is in the first instance economic, and it is evident enough that hunger, love, and alarm are but different manifestations of this elementary desire on his part to acquire as much pleasure and avoid as much pain as possible. True, this economic instinct is not primarily social, but neither is it, on the other hand, essentially anti-social; it is merely neutral, or at most non-social. Looking solely to the satisfaction of their material wants, it is quite possible that primitive people should prefer to live apart in separate families, but there is nothing in this to prevent their hunger, their love, or their alarm, either severally or jointly, leading subsequently to collective life, if the desires so suggested can be better gratified in this way. The paradox consists, then, simply in this: the psychic factors that actively make for society are not in themselves essentially social. Contrary to the advice of the ancients, men do not desire to live together all the same, even when they do not require one another's help; but only in proportion as they severally attain to any measure of well being by collective life, and when the evils of family existence greatly overbalance the good¹. Socialization, in other words, is not, as some would have it, an end in itself, but merely a means to an ultimate utilitarian end. Obviously, therefore, the so-called social sentiments are in reality but an elaboration of an earlier economic instinct, which makes for community only when set upon a social course by surrounding circumstances. Or to revert to our

(1) For opposite thesis, compare Aristotle, *Politics*, iii. 6. 3, 4, 5.

original conjecture : economic psychology offers the initial cause, while economic geography affords the incidental occasion of society.

THE FOOD SUPPLY.

We must look to the environment, therefore, to discover under what external conditions the economic instinct is metamorphosed into the social sense. But instead of proceeding at once to the positive enquiry, it will be better for us to follow the Socratic method, and, in order rightly to comprehend Being, first to determine the nature of Non-Being. Putting the question, then, in negative form, we may ask : what is it in the environment that makes aboriginal man non-social ? Aristotle suggested an adequate answer : *the character of the food supply* : “ There are many sorts of food, and therefore there are many kinds of lives, both of animals and men ; they must all have food, and the differences in their food have made differences in their ways of life. For of beasts, some are gregarious, others 'are solitary ; they live in the way which is best adapted to sustain them, accordingly as they are carnivorous or herbivorous or omnivorous : and their habits are determined for them by nature in such a manner that they may obtain with greater facility the food of their choice'.” The suggestion is certainly apt, but before being applied to sociology, the underlying economic distinction between man and beast should be somewhat more precisely defined. As I said before : beasts are usually content to live upon what they can find, while men, on the other hand, are constantly seeking to find what they can live upon. Between animality and humanity, there is this marked difference : while the respective foods of the various animal species are relatively fixed, the human being is always ready, and usually anxious, to vary his diet. It follows as a corollary, therefore,—if Aristotle was right in his analysis,—that the ways of human life vary much more widely than the manners

of animal existence. In passing from biology to sociology, we should supplement the suggestion, accordingly, by the addition of the active mode, and render it in this way: Beasts' habits are determined for them by nature in such a manner that they may obtain with greater facility the food of their choice; while men naturally determine their own habits in such a manner that greater facility may be obtained in the choice of their food.

ISOLATION.

Suppose we take this, then, as our clue, and consider, for a moment, the possibilities of food-choice open to primitive man. From all we know of our ape-like ancestors they were evidently frugivorous. Like the gorillas, they lived upon the fruits and roots of the tropical forest. There are no existing racial remainders quite so low in the economic scale as this; and yet of the Doko people of Equatorial Africa, Herr Krapf says: "'They have no chief, no laws, no weapons; they do not hunt, do not till the soil, but subsist entirely on fruits, roots, mice, snakes, ants, honey, etc. Like monkeys they climb trees and bring down fruit.'" It is no very difficult matter to determine what manner of human life is adapted to such economic conditions. Tropical fruits and roots usually grow here and there throughout the forest, and where this is the case, the food-quest of course leads to the constant dispersion of families. Nor when provisions are found, is there anything in fruit-gathering, berry-picking, or root-grubbing to call for combined effort on the part of either males or females. Fathers of families have nothing to gain, therefore,—and, if the supply be precarious, a great deal to lose,—by joining their productive forces. To suppose a typical case; isolated families of manlike apes or ape-like men wandering through the woods can certainly

(1) "Sie haben kein Oberhaupt, keine Gesetze, keine Waffen, sie jagen nicht, bauen kein Feld, sondern leben allein von Früchten, Wurzeln, Mäusen, Schlangen, Ameisen, Honig, etc. Gleich den Affen steigen sie auf Bäume und holen Früchte."—Petermann's *Mittheilungen*, xvii. (1871) p. 149.

acquire more coco-nuts *per capita* than they could by proceeding in bands. It is not at all surprising, therefore, that under such environmental circumstances the domestic partnership should continue to constitute the largest productive group, and that there should be no such thing as society. Isolation being to his economic advantage, frugivorous man is as naturally non-social as is the fruit-eating ape.

During the glacial period some of our progenitors probably proceeded from their original forest homes to roam along sea-shores that have long since subsided; while others wandered still farther through the woods. After this the former group was obliged to subsist chiefly upon shore-fish, while the latter became gradually carnivorous. As in both instances, the food-supply was still for the most part dispersed, these dietary changes worked, however, but little alteration in their domestic manner of life; for collecting crustaceans requires no coöperation, and, as a usual thing, gregariousness is a positive disadvantage to animals that live upon flesh. Throughout this long period, therefore, the character of the food-supply continued to make in most cases for dispersion and disintegration, and the family consequently remained the only form of human society. Being caught in the course of their migration in an unfavorable environment, some savages have not yet succeeded in advancing beyond this primitive stage. Fuegians and Andaman Islanders, for example, still fish in family groups along their shores; Australian and Bushman fathers usually hunt individually and by stealth over their barrens. "Scarcity of food, and the facility with which they move from one place to another," says Admiral Fitzroy, "are, no doubt, the reasons why the Fuegians are always so dispersed among the islands in small family parties, why they never remain long in one place, and why a large number are not seen many days in society." Lichtenstein likewise tells us that "the hardships experienced by the Bushmans in satisfying the most urgent necessities of life, preclude the possibility of their forming larger

societies. Even the families that form associations in small separate hordes are sometimes obliged to disperse, as the same spot will not afford sufficient sustenance for all. The smaller the number, the easier is a supply of food procured'. It appears to be in the natural economic order of things, in short, that shore-fishers and stealth-hunters should likewise remain family-folk and domestic economists, because their precarious food-supply is, for the most part, dispersed and acquired to better advantage by isolated effort.

Our clue has thus brought us to a preliminary conclusion, and in reply to the negative question we now have this answer to offer: where the supply of food is scantily spread over a considerable area, and when its acquisition does not call for combined effort, it is not to the economic interest of families to congregate. Isolation is the best means of survival in such an environment, and where these conditions prevail, men are naturally non-social.

AGGREGATION.

After affirming that aggregation precedes socialization, Mr. Giddings rightly surmises that "the chief conditions of aggregation are found in the physical environment". I should like to state this general conclusion somewhat more precisely. The negative proposition having been established, it is easy to infer from the foregoing what environmental conditions tend to bring people together. They are evidently the opposite of those that draw people apart. Following this principle, we should expect a local food-supply to lead to congregation. To come upon conditions favorable to aggregation, we must accordingly look to localities where natural means of subsistence abound. If, however, there be but a brief period of plenty, the resulting aggregation will be correspondingly temporary and of proportionately less social avail. Fruit groves, berry patches, and wild grain fields, offer

(1) Westermarck, *loc. cit.*, p. 47.

(2) *The Theory of Socialization*, p. 7.

passing opportunities of this kind. "Thus to this day the Zanderillos of Mexico come to the sandy lowlands of Coatzacoalco when the melons are ripe; the Ojibbeways assemble around the marshes where the *Zizania*, or water-rice, grows; and the Australians hold a kind of harvest festivity in the neighborhood of the marsiliaceous plants which serve them for grain'." For aggregation to count for anything toward the further process of socialization, it must manifestly be more permanent than this. People may be brought together where provisions are temporarily abundant, but families are only held together in localities where the food-supply is relatively enduring, the abode, for instance, of certain sedentary food-animals, or the spawning ground of edible fish. Regions of this kind are capable of supporting a stationary population, and families fortunate enough to find such spots, grow in time by generation and accretion into what Mr. Payne calls the tribe, "a group of families really or theoretically consanguineous, holding in common a definite food-producing district²."

In the course of their food-quest, some of our distant carnivorous ancestors must have come eventually to places in the forest where game was comparatively plenty. There they probably settled down to semi-sedentary life, and lived for the time in more or less permanent villages, somewhat after the manner that Pygmy hunters dwell to-day in the jungles of Equatorial Africa. An environment of this sort does not, however, conduce to close or permanent congregation, for the area occupied must necessarily be extensive, and until hunting is eked out by primitive root-culture, the failure of natural subsistence makes inevitably in the end for renewed disintegration or further migration. Some of the Black Fellows of Australia lay claim to hunting grounds of this sort "in behalf of the family or tribe, and regard as an enemy

(1) Ratzel, *History of Mankind*, vol. i. p. 88.

(2) *History of America*, vol. ii. p. 41.

any one who enters or uses these territories without leave¹." Within this region "they wander about to hunt game or collect roots, sometimes in detached families, sometimes in large hordes"; but, as Mr. Starcke is careful to state, "such a horde is not a homogeneous mass, but consists of numerous smaller divisions²." Thus, though the possession of a common hunting ground does lead to a loose kind of tribal aggregation, it can not be said to exercise much cohesive influence upon the still disjunct family groups.

The occupation of a fishing ground, however, occasions relatively close and permanent congregation, on the one hand, because the families must assemble at a definite place along the banks of the stream, and also on account of the fact that the fish caught at good times can easily be preserved during the slack season. Those of our paleolithic ancestors who skirted along the edge of the ice fields in search of shore fish (and with these our genealogical connection is probably closer than with the earlier carnivorous group) must ultimately have arrived at estuaries and river-mouths, whence their food-quest led them inland upstream to the fishes' spawning grounds. There they probably camped in domestic groups, very much as Ostiak families congregate to this day along the banks of the river Ob. Such was also the course of the American aborigines, who, as Mr. Payne conjectures³, migrated from their original home in the Old World in tertiary times, or during the glacial period, when the western continent was still connected with Asia on its Pacific side. Hence the interesting coincidence Mr. Mason alludes to in his "Origins of Invention": "If any one will consult the Fish Commissioner's map of the United States for the places where food-fishes most resort for spawning, he will at the same time be on the track of the most

(1) Ratzel, *loc. cit.*, i. p. 126.

(2) Starcke, *Primitive Family*, p. 20.

(3) *Loc. cit.*, vol. ii. pp. 66-74.

prolific old Indian camp sites¹." From this we may infer that fisher-folk are naturally induced to pitch much more permanent camps, and this being the case, their tribal aggregations must become relatively concrete.

By taking the food-quest as our clue we have now arrived at a positive conclusion: A local food-supply inevitably causes families to congregate, and the more concentrated and permanent the source of subsistence, the closer and more enduring is the resulting tribal aggregation. Forest-hunters and river-fishers are thus naturally tribal economists. Isolation is not economically advantageous under such environmental circumstances, and being brought together in their own interests, such people are led to become at least semi-social.

THE TRIBAL ECONOMY.

But it will not do to presume that mere living together leads directly to sociality. True, we have in the tribe, as thus constituted, the kind of consanguine group that Mr. Fiske took to be the germ of society; but instead of therewith crossing "the chasm which divides gregariousness from sociality," we have actually only advanced from insolation to the first instance of human gregariousness. We know what external circumstances induce the succeeding generations to hold together, but we have not yet come upon any new principle of association. Properly speaking, the tribe is merely an aggregation of families, implying sameness of place and sameness of race, if you will, but not necessarily social solidarity. To make sure of this, let us put the tribal aggregate to economic and political tests, and note the results of our analysis.

Families may congregate where game is plenty in the woods, but so long as the prey can be caught and killed without help, there is nothing in the productive process to bring the male element of the population together. Thus, speaking of the

(1) *Origin of Inventions*, p. 263.

Voguls of Northern Siberia, Pallas narrates': "They dwell in their forests ordinarily in families or groups of relations. They have no means of subsistence apart from the chase. They are forced, therefore, by the question of a living to dwell as widely separated from one another as possible,—and not in village communities, since these would not find the game in the vicinity of sufficient quantity to maintain their existence²." And of certain South American Indians Humboldt remarks: "These savages know only their own family, and a tribe appears to them but a more numerous assemblage of relations. They know the duties of family ties and of relationship, but not those of humanity³." To a somewhat less extent this is also true of the proverbially shiftless river-fishers, whose employment rarely calls for anything beyond the loosest kind of combination in building their fish-dams, their weirs, and the like. Thus, "previous to the introduction of the horse," the Snake Indians, according to Mr. Wyeth, exhibited no power of combination, "except in the single instance of the salmon fishery," and though this naturally called "for some kind of a law to render it available," the organization was very imperfect⁴. Nor are the women of hunting or fishing tribes called upon to coöperate in the occupations that fall to their lot, namely, root-grubbing, berry-picking, and camp-keeping. In consequence of such productive methods, the principle of economic consistency running through the tribal group, is that of sexual rather than that of personal division of labor. The

(1) "Sie wohnen in ihren Wäldern gemeiniglich nur in Familien oder Verwandtschaften zusammen. Weil sie keinen anderen Lebensunterhalt als die Jagd haben, so treibt sie die Notdurft, so weit sie nur können von einander getrennt und nicht in Dorfschaften zu wohnen, welche in der Nähe nicht Wild genug finden würden, um sich zu ernähren."

(2) Hilderbrandt, *loc. cit.*, p. 2.

(3) Spencer, *loc. cit.*, ii. p. 273.

(4) Schoolcraft, *loc. cit.*, i. pp. 207-208.

tribe is accordingly a mere aggregate of domestic economies, and in no sense a political economy.

This living together of families in one place, is of course accompanied by some sort of genetic association, patriarchal or matriarchal, as the case may be; but such authority as arises over the domestic groups is of a purely negative character and usually reposed informally in the old and wise for the purpose of continuing tribal custom and preserving the peace. To take a typical example, Dobritzhoffer tells us that Abipones tribesmen, "without leave asked on their part, or displeasure evinced on his (the cacique's), remove with their families withersoever it suits them and join some other cacique; and when tired of the second, return with impunity to the horde of the first'." In political terminology, therefore, the concourse should be called a confederacy rather than a state, as sovereignty evidently resides in the parts, and not in the whole.

Judged by either criterion, consequently, the tribe is nothing more than a loose aggregation of families, wherein each domestic unit is economically self-sufficing, politically independent, and only locally and genealogically bound to the group. It would surely be skipping a step, therefore, to attempt to derive what Mr. Fiske calls "the capacity for social combination" directly from "the permanent character of the relationships between the constituent members" of any such aggregate.

COOPERATION.

But if neither sameness of place nor sameness of race constitutes the kind of social identity we are seeking, what is it then that separates society from these semi-social forms? Strictly speaking, it is as impossible for the sociologist to say just where society begins as it was for the ancient opponents of Zeno to determine exactly how many pebbles it took to make a pile. But

(1) Spencer, *loc. cit.*, ii. p. 282.

(2) Fiske, *loc. cit.*

the notion of a pile of pebbles is none the less definite because of the paradox, and so, in somewhat the same way, by keeping the collective concept in mind there should be no logical difficulty in comprehending the general characteristics of society.

From the categories which we have already established, this much at least has become clear: sociality is in the first instance to be distinguished not from *individuality*, but from *domesticity*. Society does not begin with the elimination of the independent individual, so much as with the absorption of the self-sufficing family. The change to be described is not, therefore, directly from severalty to collectivity, but rather from the domestic partnership to some sort of corporate activity. And as the real antithesis is between sociality and domesticity, the tribe is evidently the transitional form. The general problem of social origins reduces itself, consequently, to a discovery of the particular process by which the tribal aggregate, composed of separate families held together within territorial limits by genetic connections, is transformed into an association whose members are bound together by other than domestic ties. Assuming our original hypothesis to be correct, it is evidently economic exigency that presides over the change. Luckily, the difficulty of the discovery is still further diminished at this point by the possibility afforded of inferring once more conversely from what has preceeded, the particular character of the process to be defined. The reason why the tribal aggregate continued to be composed of discrete family groups, we found to be because nothing had yet arisen in the food-quest to cause its constituent members to combine. In order to reach the antecedents of society, therefore, we have only to follow the same clue, and carry our investigation of production to the stage where congregation is no longer possible without some sort of combined effort. What we have particularly to look for is, in short, something in the character of the food-quest that calls for coöperation on a larger scale than that involved in the natural productive partnership between man and wife. At the

point where such an element enters in, we may expect to come upon the beginnings of the sought-for transition from the aggregate to the association, and in observing the gradual development of the coöperative principle, we shall be following the normal process of socialization.

DEFENSIVE ALLIANCE.

With the way thus indicated, we may pick up the path again that leads through the tribal economy. Combination, we shall find, was first forced upon tribesmen by external conditions; it usually came about in this way. After the originally peaceful domestic economists had settled down upon their hunting or fishing grounds, they very often found themselves in possession of property which had henceforth to be guarded from possible intrusion on the part of their less fortunate fellows. Isolated tribesmen there were, no doubt,—like many that still dwell in the heart of the Brazilian forest,—who never had to learn the duties of defense, but in most cases the finders of food-grounds were eventually obliged to devote some of their productive energy to preserving their possessions from the inroads of other seekers after subsistence. Individual resistance was found to be of little avail, and so it came about that under such circumstances the sudden fear or painful suspense excited by an apprehension of danger from human foes, not only energized, as before, the mental faculties of each tribesman, but also induced them for the first time to organize their forces for defense. And in this way *Alarm*, used thus far in the subjective sense, came by natural derivation to apply objectively also to the notification of approaching danger, the signal for attention, and ultimately the summons to arms.

Tribal groups whose territories were exposed to attack were obliged, in other words, to organize some kind of a fighting force, and owing to the physiological requirements of the case, it was usually the younger or more vigorous males who were enrolled for this purpose. The older organic principle of domesticity could of course contribute nothing to the organization of such a

martial band; if anything, indeed, family affection must at first have militated against the innovation. A new principle of combination had accordingly to be devised. What was needed for the purpose was manifestly some purely numerical system of coördination under an elected chief, chosen solely because of his recognized ability as a leader.

There are many examples of such defensive alliances among aboriginal tribesmen. The usually peaceful Indians of North-west America, for instance, were often compelled to coöperate in defense of their fishing rights; for "when," as Mr. Bancroft says, "one people obstructed the river with their dam, thereby preventing the ascent of salmon, there was nothing left for those above but to fight or starve¹." The otherwise independent Tasmanian hunters also recognized the necessity of united effort under a chosen chief in time of war, what though "after the cessation of hostilities, they usually retired to the quietude of their every day forest life²." It is only when tribal territory is open to constant attack that the defensive force maintains its integrity for any length of time. On this account, all the Mundurcus settlements of Brazil are obliged to maintain a permanent military organization. "A separate shed is built outside each village where the fighting men sleep at night, sentinels being stationed to give the alarm with blasts of the Turé on the approach of the Araras³." Among the Kaffirs likewise, whose intertribal warfare is proverbial, "the troops are all divided into distinct regiments, dispersed through the country, and kept apart from the rest of the people, even from their wives and children⁴." In the majority of cases, however, combination for defense appears as a temporary phenomenon, and for this reason exercises only intermittent

(1) Bancroft, *Native Races of the Pacific*, i. p. 344.

(2) Spencer, *loc. cit.*, i. p. 522.

(3) H. W. Bates, *A Naturalist on the River Amazon*, p. 225.

(4) Spencer, *Cyclopedia, of Descriptive Sociology*, iv. p. 13.

influence upon the development of the coöperative ideal. The Caribs, for example, "see no advantage in the ties of society but for common defense¹"; and of the Creeks, Schoolcraft says, "it would be difficult, if not impossible, to impress on the community at large the necessity of any social compact that should be binding upon it longer than common danger threatened them²."

But whether relatively permanent or merely passing, the defensive alliance always marks a step, at least, in the direction of society. Thus, if limited to the particular circumstances here described, Locke's general surmise is accurate enough, that "the great and chief end of men uniting into commonwealths, and putting themselves under government, is the preservation of their property³"; and when confined solely to defensive operations, Spencer's suggestion also becomes pertinent at this point, that coöperation in war constitutes the chief cause of social integration. Or in language more in harmony with our hypothesis, we may register our findings thus far in the following conclusion: when a group of families hold in common a definite food-producing district that is exposed to attack, the male members of the group must be prepared, on occasion, to organize for defense. When compelled to guard their source of subsistence, therefore, tribesmen become temporarily social.

OFFENSIVE ALLIANCE.

It was probably in the efficiency of these defensive alliances that the rising generation of tribesmen first perceived the positive possibilities of corporate activity. The discovery could not be put to productive account, however, until economic occasion arose to apply the new force, and this could only come with a change in the character of the food-supply. As we are aware, primitive man is always ready, and usually anxious, to modify his

(1) Spencer, *Principles of Sociology*, i. p. 522.

(2) Schoolcraft, v. p. 279.

(3) *Second Treatise of Government*, chap. ix. §124.

manner of life, if by such means he can increase or vary his diet. To many ancient tribesmen, doubtless, no such opportunity was ever offered; but for those that settled in the vicinity of the sea, or found themselves in the proximity of plains, new careers were ultimately opened. There were myriads of fish and sea animals to be caught off-shore, and over the level lands roamed countless herds of fleet-footed gregarious creatures that might be captured, if the proper means were employed. But the domestic economist with his primitive hunting and fishing implements,—his bow and arrow, his spear, his nets and the like,—was still technically incompetent to acquire prey of such sort. There were problems of inventive ingenuity first to be solved, before tribesmen could take advantage of the new economic opportunities thus offered in their environment. Stout boats were needed to bear the fishers over the waves; swift steeds were required to carry the hunters across the plains. And after necessity had led to the invention of these technical means, the form of industrial organization proper for such pursuits had still to be determined upon. Experience soon showed that sea-fishing and plain-hunting were vocations that required intimate coöperation for success, and the adventurers embarking upon these employments were, consequently, obliged to dissolve their older domestic partnerships and enroll themselves in food-getting companies. According to the environmental circumstances, therefore, crews or cavalcades were constituted with a view to waging a more aggressive warfare upon the animal kingdom, and, in either case, the stock of subsistence was considerably increased. Though organized originally for industrial ends, these coöperative companies were found to be equally effective for military purposes. Thus, wherever the food-quest could be facilitated by waging war also upon men, plain-hunting and off-shore-fishing were very likely to be supplemented by their natural correlatives, pillage by land and piracy on the seas; and, as a result, offensive warfare came in such cases to be regarded as a normal concomitant of production.

History has no record of this interesting economic transition, and archaeological remains offer but little evidence of industrial organization. That the early inhabitants of Europe took to the Mediterranean and Baltic in boats, we may presume, perhaps, from the legends that have survived of ancient corsairs and vikings; and there seems to be little doubt that the primitive cattle-driving marauders of the Asiatic steppes were originally hunting bands. From the logic of events, likewise, we should be led to surmise that the clan traditions so prevalent in classical antiquity owed their origin to the organization of some such prehistoric food-getting companies. If, however, we wish to trace the actual development of the productive clan, we must turn our attention to other parts of the world, whose history has not been recorded. Among the islands of the Pacific and upon the plains of America, fishing and hunting corporations still survive,—or, to be more accurate, have persisted until comparatively recent times. We may, therefore, accept the canoe crews of the South Sea Islanders, and the Red Men's buffalo hunting bands as the best existing examples of primitive clan life.

The evolution of the independent self-sufficing clan was evidently a gradual outcome of tribal development. At first, it was only the younger males,—and usually the members of the already-organized defensive force,—who joined these primitive labor unions. Groups of hardy adventurers were wont to put forth periodically on journeys or voyages, and return after an interval to the stationary tribal camp, supplied with provisions and plunder. Thus, among the sedentary Oregon tribes it was usual, says Schoolcraft, “for parties of Indians to leave every summer to hunt the buffalo on the other side of the mountains¹”; and in New Guinea also, “it is the custom to fish by detachments. The appearance of a shark puts whole villages into commotion, and in time of peace distinguished persons take

(1) Schoolcraft, v. p. 656.

command of fishing expeditions, just as in time of war they lead troops¹."

It was upon these periodical expeditions that the younger members of the tribe received their preliminary training in the requisites of coöperative activity. At such times, whether in their canoes or on horseback, upon their voyages or on their raids, the young men were separated from their families and temporarily removed from tribal influence. There were neither territorial nor genetic ties to hold the company together; community of economic interest was, consequently, the only possible bond of union. Success in their employment, and even the personal safety of each individual member of the band, depended primarily upon the preservation of the whole crew or cavalcade. A feeling of fraternity was thus aroused, and a sense of solidarity engendered that made men stand shoulder to shoulder or pull together under the command of a chosen chief. The Nootkas of the Northwest, for example, proceed upon this coöperative plan, when "whales are attacked in canoes by the chief with a select few from the tribe²"; and among Plain Indians likewise, when "buffalo hunting is carried on as a common livelihood, the men appear as organized, intelligent, obedient to a leader, observant, self-possessed, quick-sighted, brave, strong, enduring³."

With a view to symbolizing this new ideal of brotherhood, clansmen usually chose some shibboleth, or totem sign, the emblem of which they were wont to wear upon their persons or to lash to the prows of their common canoes. In order to impress the rising generation with the sanctity of the clan obligation, it was also customary for the members of the hunting and fishing companies to separate chosen neophytes from tribal influence, and after a period of penance and fasting, to initiate them into the

(1) Ratzel, *loc. cit.*, p. 251.

(2) Bancroft, *loc. cit.*, i. p. 186.

(3) Schoolcraft, iv. p. 60, and Mason, *Origins of Inventions*, p. 277.

order with some sacred ceremony, like the letting of blood or the knocking out of teeth. In this way, the tribe became gradually differentiated. There were, on the one hand, the stay-at-homes, the patriarchs and weakly men, whose connections were primarily with the household group,—the women, children, and sometimes the slaves,—and, on the other hand, there were the younger and more vigorous males, who owed allegiance in the first instance to their clan, and clung closely to their comrades in arms.

So long as hunting and fishing expeditions were only undertaken periodically, the older tribal aggregate was not, however, entirely deranged, perhaps not more than domestic tranquillity is disturbed, now-a-days, by the existence of bachelor clubs. But as diminishing returns set in, the hunting, fishing, or fighting group found the field for its productive activities gradually restricted in the immediate vicinity of the tribal camp, and was consequently obliged to wander further forth in search of provisions and plunder. As journeys and voyages were necessarily prolonged, tribal ties grew weaker, and club ideals naturally took a firmer hold upon the savage mind. Ultimately, it became necessary in many cases for the clan to detach itself entirely from the tribe and lead henceforth an independent existence. But before parting permanently from the parent stock, it was obviously incumbent upon the clansmen to make some provision for the preservation of their kind; because a celibate club could only last through one generation, and would decline in economic efficiency at that. Young and vigorous women, able and willing to endure the hardships of such a life, had consequently to be chosen or captured by the clansmen to accompany them on the march, or go with them on their voyages to distant lands. The wives were no longer members of domestic partnerships, however, but constituted of themselves a subsidiary company, whose duty was to bear and rear the children, gather fruits and roots, carry the baggage and keep the temporary camp. Thus, by a process

of economic selection, virile males and fertile females were in the course of time definitely detached from the earlier tribal aggregate, and sent forth upon a wandering or voyaging life into environments that were bound to develop a hardy race inculcated with coöperative ideals.

Almost all the islands of the Pacific were visited from time to time, and many were also permanently occupied, by self-sufficing clans of this sort. Sometimes the men voyaged alone, and on other occasions they took their wives with them in their canoes to colonize some far-off island. It was, as Ratzel tells us, however, in all cases the acquisition of food that in the first instance gave rise to such associations; the canoe crews were one and all, therefore, primarily productive clans. Thus, as Ratzel says: "In the life of a race like that of the Solomon Islanders, seafaring is undoubtedly the only element that can concentrate their forces. * * * Not the least advantage of their joint fishing is the disciplining of the crews. In the larger fishing boats a leader has to be chosen who must be implicitly obeyed, since all success depends upon obedience. Governing the ship paves the way to ruling the state'. Before the settlement of the Great West by the white man, the American plains were in like manner controlled by independent clans of buffalo hunting Indians, whose economic methods and political organization are best described by Colonel Dodge:—

"Each tribe is divided into bands, each under the control of a sub-chief whose great anxiety is to make himself popular, and get as many lodges as possible under his command. Each sub-chief, as a rule, keeps his band as much as possible away from other bands. This is done to ensure its safer and more perfect control, and is desirable on account of the greater facility for procuring food." * * * The hunters are called "dog soldiers." "This guild comprises the whole working force of

(1) Ratzel, *loc. cit.*, i. p. 131.

the band. It is the power which protects and supplies the women and children. The home, or main camp, with its women and children, horses, lodges, and property of every kind is under the control and protection of these 'dog soldiers.' From them emanate all orders for marches. By them the encampments are selected. They supply the guards for the camp, designate the hunting parties and the ground they are to work over, and when buffalo are sought, they select the keen-eyed hunters who are to go in advance and make all the arrangements for the surround¹."

Taking these instances as typical of the normal trend of development, we may now draw our final conclusion: when the food-quest calls for continued coöperation on the part of the male members of the tribal group, aggregation is succeeded by association. Thus, tribesmen who settle on the sea-coast or in the proximity of plains are led in the course of their economic development to constitute permanent productive clans. Sea-fishing and plain-hunting being employments which require collective action under a chosen chief, persons engaging in such pursuits become permanently social.

THE CLAN ECONOMY.

To be sure that we have really reached the social stage at last, let us put the clan economy to the same economic and political tests to which we subjected the tribe, and again note the results of our analysis.

That the clan is an association, and not a mere aggregate, is evident on the surface. What is not so obvious, however, is the extremely significant fact that this association is not, like the tribal aggregate, composed of connected families, but constituted primarily of coöperating individuals. True, the family relation is still contained within the clan, because it must of biological necessity persist, to provide for the preservation of the species. Economically speaking, however, the domestic union has been

(1) Lieut. Col. R. F. Dodge, *The Plains of the Great West*, pp. 263-266.

transformed by the associative process from a productive partnership into a consumption group; that is to say, it is no longer constituted for the purpose of acquiring subsistence, but exists for the sake of enjoying subsistence that is already acquired. In consequence of this change, the principle of economic consistency running through the coöperative association is now that of personal, and no longer that of sexual, division of labor. The permanent productive clan is, therefore, something more than a mere aggregation of domestic economies; it is manifestly the first instance of a true political economy.

That the clan constitutes a state and not a confederacy is also apparent on the face of it. In the tribe each family is politically independent because economically self-sufficing. But the moment the domestic partnership is dissolved in favor of the coöperative company, the natural authority vested in the father as master food-getter for the family, and therewith also the patriarch's supervisory control over the tribal group, are at once superseded by the rule of some chief chosen by the body of the clansmen. With the organization of the aggregate into an association, sovereignty passes, accordingly, from the parts to the whole,—and this is the case because through the transformation, the clan becomes the productive group. Political sovereignty begins, therefore, where family authority ceases. Moreover, as the transition is from domesticity, and not from severalty, to sociality, no question can possibly arise of purely personal rights. The individual was not self-sufficing before, nor is he now; he never exercised personal supremacy under the old regimen, and can not therefore claim residual sovereignty in the new. As a matter of fact, his dependence has simply been transferred by the productive process from the family to the clan. The sovereignty of the food-getting company is, therefore, a corporate expression, not meaning *volonté de tous*, but *volonté générale*; it proceeds primarily neither from domesticity nor from individualism, but arises rather out of the act of association, and consequently devolves upon the group.

The clan is, therefore, neither a confederacy of domestic units nor an aggregation of individuals, but an organization in the full force of the term,—it is a corporation, an economic body-politic, whose constituent members are not so much severally bound as jointly united in a common cause. The permanent productive clan is, in short, the first form of the state.

DOMESTICITY VS. SOCIALITY.

The clan thus emerges from the analysis with its integrity intact; economic self-sufficiency and political independence are its constitutional characteristics, and by these marks it can readily be distinguished from the tribe. The contrast in this case is between an association of coöperating individuals and an aggregation of related families. But the tribe we took to be a transitional form; the fundamental difference must therefore lie between the *family* and the *clan*, and the real question is: whether in this latter distinction we can discover the sought-for antithesis between *domesticity* and *sociality*. In my opinion we can. Wherein then does the clan differ essentially from the family? Certainly not in economic self-sufficiency and political independence, as each exhibits these characteristics in its apogee. The real difference is deeper, and consists originally in this: the family is primarily a biological unit, and only economic in a secondary sense; the clan, on the other hand, is in the first instance an economic institution, and only biological in so far as is essential for the survival of the species. The former is the sexual union established by nature to make human life possible; the latter is a personal association constituted of deliberate purpose by man to make life more complete. An entirely different principle of identity, consequently, runs through the two; in the family the sympathetic instinct prevails, which manifests itself in marital, parental, and filial love; whereas in the clan the sentiment of coöperation predominates, which finds its final expression in fraternal feeling and brotherly love. Placing family connections on the one hand, therefore, and personal association on the other,

we have a distinction which appears to set forth exactly the sought-for antithesis between domesticity and sociality.

From the present vantage ground, it seems to me possible to distinguish, therefore, two collective units and a transitional form, whose evolutionary order from family, to tribe, to clan, is along a distinctly marked economic line. The domestic union,—which is at once the most intimate and the least complex,—lies at the extremity of a field that exact science has already traversed. Clustered about this is the tribal aggregate which has no collective identity save sameness of place and race. Through this concourse coöperation strikes a path that leads to the permanent productive clan,—which as an association is at least coördinated if not yet complex,—and by this change in the method of organization the enquiry is brought within the confines of politics and political economy. These are fields that social science has repeatedly explored; there can be no more doubt, therefore, that this is the right road to society. Looking back over the ground, coöperation clearly marks the turning point toward the social way. Further forward, we can not at present proceed. It has been merely a reconnaissance, and not a thorough-going enquiry; but our survey has not been entirely in vain if on our return, we may affirm: Biology affords us the family, Sociology properly begins with the clan.

POSTSCRIPT.

In taking coöperation as the first stage in the process of socialization, I do not mean to infer that society, as we now know it, is constituted solely upon this principle. During the course of civilization many other elements have entered in to alter the social constitution. Since then the coöperative principle has passed through many vicissitudes, and yet in many phases of social life it still prevails, not always with the same force as in early clan life, because in the modern struggle for existence there is no such universal occasion for the combined effort of males. Along certain lines of endeavor, however, the coöperative plan

is still essential, preëminently in military activity, and to a certain extent also in every day business life. Modern political institutions are likewise rooted in the original organization of the clan, and that is why they are still one-sided. It is, indeed, a significant fact that women, who have no clan tradition of their own to fall back upon, are preëminently family folk and domestic economists, while their husbands remain clansmen in their productive life, and are only as consumers domestic. Thus patriotism, which is an outcome of sociality, is still in a certain sense opposed to domesticity:—

“I could not love thee, dear, so much,
Loved I not honor more.”

Politics have developed solely along the male line on this account, because since early clan days men have always found it profitable to join their productive forces in some way. And if now-a-days the same political sentiments are spreading through the feminine portion of the population, it is due to the fact that women are beginning to enter upon independent economic life, and consequently find it necessary to join forces with the men or else combine separately among themselves. But this is anticipating a question I mean to reserve for future discussion.

Enough has been said, I hope, to show that the social sentiment characteristic of modern civilization is neither universal nor primordial, but simply an elaboration of an earlier economic instinct. Society, as we know it historically, is neither an original institution, nor is it rooted in the natural family. Sociality arose in the first place out of the economic necessity of productive coöperation among certain groups of males, and established in this way, it has naturally grown to include, not the whole human race, as some abstract theorists suppose, but only particular nations of men who have long lived together in one place and gradually learned the advantages of association.

Coöperation is, however, only the elementary principle of socialization. After a long interval, the associative process was further

reënforced as a result of the *Domestication* of plants and animals. *Conquest* next fused these discrete agricultural and pastoral units, and the resulting social civilization was then spread abroad through *Commerce* and *Colonization*. *Capitalism* finally entered in to differentiate and then to coördinate the still separate social groups, and so produced modern *Industrialism*. But these later changes are beyond the immediate mark ; my purpose in the present essay has been simply to describe, and therewith also if possible in passing, to account for the Institution of Society.



RECENT WRITING ON ENGLISH HISTORY

EDWARD P. CHEYNEY, *University of Pennsylvania.*



CONTEMPORANEOUS uniformity of action, fashion, exists everywhere, in learning and literature, in science and art, as well as in costume and social etiquette. Perhaps it is a mistake, therefore, to class it among the weaknesses rather than among the strong points of humanity. May it not be that similarity of action among large numbers of people at approximately the same time is a part of the normal development of the race as an organic whole? Whatever may be the reason or the justification for the fact, it is certainly true that in every science a few problems interest many students simultaneously; then, in time, these subjects of interest change and a new group comes forward for attention. Thus the subjects of prevailing interest in the historical literature of any one country at any one time fall into comparatively few and quite definite classes. Some three or four categories will contain almost all that is important in recent study and writing on the history of England. Few books stand out as unique in subject, peculiar in treatment, or detached in their interest.

Most conspicuous among the characteristics of the historical work of our time is the large amount of attention which is given to the study of institutions,—economic, social, political, legal, ecclesiastical, military,—as distinguished from the personal

element in history and from the mere continuous narrative of events. An institution, historically speaking, is a usage, a habit of human action. It is made up of a multitude of similar acts repeated on innumerable occasions by many men through a considerable period of time. An event, an occurrence, an individual character or career, on the other hand, is relatively a single action or a group of simultaneous actions marked off, differentiated, detached from those which accompany it. Institutions like the jury system, the use of the long-bow, the ecclesiastical courts, serfdom, feudal land tenure, the Inquisition, were long existent, wide reaching, pervasive phenomena; while the battles of Hastings or of Waterloo, the actions and the character of King John or of Queen Elizabeth, the Insurrection of the Peasants, or the execution of Charles I., were incidents, individual occurrences at one definite time and place. Institutions are the warp and a good part of the woof of human history; events have filled out the design and formed most of its brilliant patches of color.

The most conspicuous instance and the best type of the prevailing attention given to institutions, and likewise of the fruitfulness of its results, is the work of Professor Frederick W. Maitland of Cambridge University. His first work was done as editor, for the Selden Society, of several successive volumes of pleas of royal, municipal, and manorial courts and of various ancient legal treatises¹. The institutions dealt with in the long introductions to these volumes were of course for the most part of a legal character, and the same is true of the large work² which he published in 1895 in collaboration with Professor Pollock of Oxford. Yet in no society, least of all mediæval society, is it possible to differentiate legal from economic, political, or ecclesiastical matters. There-

(1) *Select Pleas of the Crown, A. D. 1200-1225*, London, 1888; *Select Pleas in Manorial and other Seignorial Courts*, 1889; (with W. P. Baildon), *The Court Baron*, 1890; (with W. J. Whittaker), *The Mirror of Justices*, 1893; *Select Passages from the Works of Bracton and Azo*, 1895.

(2) *History of English Law before the Time of Edward I.*, Cambridge, 1895.

fore an adequate study of the development of law necessarily involved much discussion of broader social organization, questions of slavery and freedom, of the classes of society, of the status of women, of the political and financial system, of the relations of church and state. This border land spreading beyond the narrow confines of positive law out into the wider economic, social, and intellectual world, has been the special field of inquiry in the three books Professor Maitland has published successively since 1897¹. "Domesday Book and Beyond" is made up of three substantial essays, each covering some one hundred and fifty to two hundred pages, and devoted, one to matters described in the great record itself, one to the condition of England just before the Conquest, and the third to the apparently purely technical but really fundamentally important question of the meaning of the word "Hide." In this field he gives new solutions to many old problems and raises numerous new questions that we were not before far enough along even to ask. The term *manor*, for instance, or some equivalent or implication of that term, runs all through the great survey of the eleventh century and was evidently the unit of society which the royal commissioners had in mind. Either as constituent elements of manors or as their feudal possessors, all the rural population of England were ranked. Ever since this word has been rescued by the economic historians from the vague, intangible unreality of its use by lawyers and the early historians of law, it has been supposed that its significance in the eleventh century was the same as in later centuries, and that it therefore represented a territorial district as well as a legal conception, being synonymous to this extent with township or *villa*. That is to say, a manor was a stretch of land with the people on it, over which the lord of the manor possessed judicial and semi-proprietary rights. England was considered to be made up of a multitude of

(1) *Domesday Book and Beyond*, Cambridge, 1897; *Township and Borough*, Cambridge, 1898; and *Roman Canon Law in the Church of England*, 1899.

such manors each of which was, to a considerable extent, a microcosm of the whole nation. The meaning which Professor Maitland extracts from Domesday Book is a far different one. "A manor is a house against which geld is charged." By a long and skilful analysis of the uses of the term he reaches the conclusion that it had in the eleventh century a distinct, technical signification, and that a manor was simply the place where the government land tax due from certain land and its occupants was paid in one lump sum. The man to whom the government looked for the tax was the holder of the manor. A manor was therefore, sometimes a single tenement of a few acres, sometimes a whole vill, sometimes a number of holdings scattered in many vills, other manors being represented in the same agricultural groups. It was not, therefore, either an agricultural or a judicial whole but merely a unit of taxation. If this is so, it has great significance for that "most vital of all the questions in the early social history of England still in dispute," whether the mass of the people began in serfdom and only gradually emerged into freedom, as Mr. Seebohm, Professor Ashley and others, with various reservations, suppose; or whether they began in freedom and sank later into serfdom, as is taken for granted by Freeman, Green, and their school. If a manor, according to Domesday, does not suggest either serfdom or jurisdiction, what becomes of the supposed tracing of the manor as "a village community in serfdom under a lord" back from the thirteenth century into the midst of the Saxon period? And if the manors were the creation of the taxing power of government, many of them, in 1086, quite recent creations, the villages with their open fields and their various classes of inhabitants must have been there before them, and the predial slavery connected with the later manorial organization cannot be attributed to the people of whom we hear in Domesday, from the mere fact of their being subjects of a manor. Again if manor and village are not synonymous, and in any one village there are persons belonging to various manors, the village as a whole

evidently has no lord, and the lordless village is, therefore, a normal, not an exceptional thing, an old not a new existence.

Professor Maitland's conclusions on this question, in as far as he touches it at all, are in favor of the alternative of a large amount of primitive freedom. But his whole treatment of the question of freedom and slavery is original and suggestive. These terms as he interprets their use in Domesday Book do not represent clearly distinct categories, but are merely relative. It is not a question of whether a person is free or serf, but how free, how servile is his position? Freedom is a matter of degree. Is a man's freedom so great that he can come and go, that he can sell his land, that he can transfer his commendation, that he can choose the court which shall have jurisdiction over him, that he need not pay the danegeld on his land? Or is he free only in some, or in none of these respects? The *villanus* is merely the *tunsman*, the villager; whether or to what extent he is free is a doubtful matter depending on which one of the relations of life is under consideration at the time. The clear cut distinctions of Roman or of modern law between freedom and slavery, or even those of the later Middle Ages between the free tenant and the villain, did not exist in eleventh century England.

One more typical point of discussion may be mentioned which came up in the Domesday essays and in Professor Maitland's later volume of lectures on "Manor and Borough." This is the question of the origin of the old county towns of England. The various theories on the origin of towns in Europe fall into two groups, one of which supposes that they have grown up of themselves from some cause or other, the other that they were founded by some superior power. Maitland has an ingenious although not entirely convincing form of the latter theory. Most of the old pre-Conquest boroughs he conceives of as being established in the first place by the king for military purposes, as fortified places of refuge and garrison towns to defend the surrounding country. The duty of providing a garrison was

incumbent on the thegns of the county in which the borough lay. To fulfill this duty they built houses in it, provided men to live there, and supported them. This is the reason that when we come to Domesday times we find that in each of such towns there are a number of houses belonging to the king and a number belonging to each of the greater lords with estates in the surrounding country, and that these houses are counted as belonging to, or being constructively a part of, the various estates by which they presumably were at first supported. These towns were protected by a special "royal peace" and, therefore, attracted a concourse of traders. With the Conquest came the erection of castles and the consequent loss of importance of fortified towns as centres of national defense. In the meantime the commercial features of the burghal community had become so much more conspicuous than the military, that the latter were forgotten altogether and can only be inferred and reconstructed from the scattered indications in the great survey. Professor Maitland has subsequently modified this theory to some extent but his suggestion still remains a picturesque one, and its derivation from the Domesday evidence is a good example of critical skill and insight.

The same skill and somewhat more incisiveness is displayed in the six essays published as "Roman Canon Law in the Church of England." In this latest of Professor Maitland's books he has a quite definite thesis and urges it against an equally definite group of views held, up to the present time, by the greatest students of English church history. The traditional opinion, reasseverated not long ago by the Ecclesiastical Commissioners, with Bishop Stubbs at their head, is that the Canon Law as issued by the popes in the successive books of decretals which make up the *Corpus*, was only valid in England and was only applied by the English church courts in as far as it was in consonance with their national traditions and circumstances and as it had been received or approved by the authority of the

English church. In a minute and brilliant discussion of the question Professor Maitland seems to prove overwhelmingly that the English church exercised and claimed no such power of approval or disapproval, but looked upon the popes as absolute lawgivers and their canons as incapable of being questioned or resisted. What has often been confused with such a power of the English church to neglect the enforcement of certain provisions of the Canon Law is only the refusal of the English state to allow the church courts to act at all in certain cases.

A book of importance in this same field of ecclesiastical institutions, but one in which the relations with the pope are conceived of quite differently, is the "Constitutional History and Constitution of the Church of England," by Felix Makower, a Berlin lawyer¹. The Church of England before as since the Reformation is with him a purely national church, and there is remarkably little mention of its connection with Rome. His work deals principally, however, with the period since the Reformation, treating of the earlier conditions mainly as antiquities useful in the explanation of later institutions. There is much less work done in English church history than one would naturally expect. Father Gasquet² has written a number of essays and some more continuous books on various periods or aspects of English history in which church interests predominate, but he is so preoccupied with the task of correcting false representations that he becomes a mere apologist for the church, and his books are considered, perhaps somewhat unfairly, as a part of polemical literature rather than as the work of a serious historian. No doubt there is much energy expended in this polemical writing and in the search among

(1) Felix Makower, *Die Verfassung der Kirche von England*, Berlin, 1894; English translation, *The Constitutional History and Constitution of the Church of England*, London, 1895.

(2) Francis Aidan Gasquet, *Henry VIII. and the English Monasteries*, London, 1895; *The Old English Bible and Other Essays*, London, 1897; *The Eve of the Reformation*, London, 1899.

the débris of early combats for weapons and ammunition for the struggles of our own time. But any student who has once realized the historical significance of the mediæval church, the extent to which it was the great coördinating, civilizing factor in mediæval society, can scarcely help but wonder that it is not the most favored field for scholarly historical work.

Until the twelfth century at least the history of the church is the history of the intellect, the organizing ability, the higher life and thought of the Middle Ages. With the thirteenth century the organization of purely civil life, of royal administration, of law, of the municipalities, comes to contain more intellectual elements and to rival church history as the history of enlightenment. Nevertheless, the crude political institutions of an earlier period, those of feudalism and of the progressing national administration, seem to have exerted on the whole a greater attraction upon historical students. In Professor Maitland's books there is of course much discussion of such questions, but they have been perhaps even more minutely examined by Mr. J. H. Round of London. He has written three books, each being made up partly of previously published studies, partly of new essays¹. In an article in the "English Historical Review," republished in the second of these volumes, Mr. Round puts forth a distinctly original proposition which has in turn given rise to a reëxamination of the whole group of institutions to which it refers. It concerns the origin of the tax or feudal payment known as "Scutage." In all our books this is described as a device introduced by Henry II. in 1156 or 1159, by which his tenants in chief, the feudal nobles of England, were allowed or required to pay a fixed sum in money in lieu of the fulfillment of the military requirements of their tenure, that is, to serve the king in

(1) J. H. Round, *Geoffrey de Mandeville; a Study of the Anarchy*, London, 1892; *Feudal England*, London, 1895; and *The Commune of London and Other Essays*, Westminster, 1899.

the field with a certain number of followers. This was supposed to have had the twofold advantage,—indeed to have been introduced for the twofold purpose,—of providing the ambitious king with money with which to hire a more mobile and effective military force, and of weakening the military habits of the great vassals. It appears, however, on closer investigation that scutages had been collected before the time of Henry II.; and that they were not so much commutations of military service as a special form of feudal imposition scarcely distinguishable from the aid or the *donum*, though it is true collected when otherwise a summons to actual military service might have been expected. Scutages may be described as the most conspicuous part of a general process by which feudal tenures were being developed in England on the side of their pecuniary value to the crown and neglected on their military side. Such an interpretation of the institution of scutage makes it much less of a personal device on the part of the great Angevin king, much more a natural outcome of the conditions of the time than we have been in the habit of believing. This is not the only instance where a closer study of the records has recently deprived famous rulers of the traditional credit of initiating far reaching lines of policy. It has been invariably given as one of the proofs of the sagacity of the Conqueror that he “scattered” the lands which he granted to his great Norman followers, giving to each one of them an estate here and an estate there all over England, but no great body of land in one section of the country; and that his object in doing this was to prevent the consolidation of feudal power such as the great dukes, counts, and viscounts possessed in France, to the destruction of the real power of the king. A careful examination of Domesday Book, however, rather indicates that the scattering of the great fiefs in the eleventh century was an unintended result of the process of confiscation and regrant, arising in the natural course of handing over to the Norman lords the rights over the land and its people formerly possessed

by the expelled Saxon lords. Henry II. and William I. have many claims to the character of astute rulers, but the introduction of scutage and the decentralization of great fiefs are probably not to be counted among them.

Town life at various periods has also attracted its group of writers. Since the publication of Mrs. Green's work on the towns in the fifteenth century¹, Miss M. Dormer Harris has written an excellent sketch of life in old Coventry², and various towns³ have been issuing in official form selections from "calendars," or even full publications of their municipal records; documents which it may be hoped will prove to be the crude material out of which will be built up other similar works. Along with these examples of the large proportion of English historical study which is being given to institutions, allusion must be made to the monographs of a similar character which are appearing from time to time in the form of theses offered for the degree of Doctor of Philosophy, especially in Germany and America⁴. A significant chapter in Meitzen's "*Siedelung und Agrarwesen*"⁵ also applies to England.

Does the history of the English navy belong in the same class with the works just discussed? Certainly it is a great English

(1) Mrs. J. R. Green, *Town Life in the Fifteenth Century*, London and New York, 1894.

(2) Mary Dormer Harris, *Life in an Old English Town*, London, 1898.

(3) Among these are *Nottingham*, edited by W. H. Stevenson; *Leicester*, by Miss Mary Bateson; *Abingdon*, by B. Challoner; *Cardiff*, by J. H. Matthews; *Winchester*, by C. W. Holgate.

(4) Among these may be mentioned especially: T. W. Page, *Die Umwandlung der Frohndienste in Geldrenten*, Leipzig, 1898; Miss N. Neilson, *Economic Conditions in the Manors of Ramsey Abbey*, Bryn Mawr, 1899; J. F. Baldwin, *The Scutage and Knight Service in England*, Chicago, 1897.

(5) August Meitzen, *Siedelung und Agrarwesen der Westgermanen und Ostgermanen, der Kelten, Römer, Finnen und Slaven*, Berlin, 1895; book vii. chapters 7 and 8.

institution. "It is upon the navy that under the good providence of God, the wealth, the prosperity, and the peace of these islands and of the Empire mainly depend. Not monarchs, not statesmen, not scientists, not reformers, not manufacturers, not even merchants, or soldiers, have contributed as much as the navy has contributed towards the building up, the extension, and the preservation of the British Empire." Such are some of the opening words of a sumptuous work on this subject of which four out of six announced volumes have so far appeared¹. Curiously enough it is only one of at least a dozen books of some pretensions that have appeared on the same general subject within the last two years, besides a number of magazine articles and a considerable bulk of freshly published source material.

This sudden attention given to the history of the navy is a good example of the simultaneity of interest already referred to, and may be taken as the second of the groups into which recent writing so largely falls. The navy is almost a new discovery so far as historians are concerned. Before these recent years there had been extremely little written on the naval history of England. Nor can the lack of historians of the navy be attributed to lack of appreciation of its interest. The navy with its commanders and its sailors has always in England been the idol of the populace, the reliance of the statesman, the admiration of philosophers. Coke says in his "Fourth Institute," "The king's navy exceeds all others in the world for three things, viz. beauty, strength, and safety. For beauty, they are so many royal palaces; for strength, so many heavy castles and barbicans; and for safety they are the most defensive walls of the Realm. Amongst the ships of other nations they are like lions amongst silly beasts, or falcons amongst fearful fowl." Sir Walter Raleigh with his usual insight and with admirable brevity had said,

(1) William Laird Clowes, and others, *The Royal Navy, a History from the Earliest Times to the Present*, vol. iv., London, 1899.

"Whosoever commands the sea commands the trade, whosoever commands the trade of the world commands the riches of the world, and consequently the world itself." One hundred and fifty years before that time the "Libell of English Policie," one of the few vigorous poems in the vernacular in the fifteenth century had appealed to the king to

"Cheryshe marchandyse, kepe th'amyralte
That we bee maysteres of the narowe see."

There was no lack of appreciation of the navy, but it had not become a subject of historical study or writing. One of the first indications of the rise of an interest in the details of its history was the organization in 1894, of the "Navy Records Society" for the publication of original material of naval interest. During its first year it published two volumes of "State Papers Relating to the Defeat of the Spanish Armada, Anno 1588," and has issued three volumes in each year since, under various editorship. However interesting the work of this society is, the rules for the editing of the volumes of its series are, to say the least, unfortunate. They require all documents in foreign languages to be translated into English and all which are already in English to be modernized in spelling. Ready comprehensibility is evidently gained by this plan, but that alone, while a great many things are sacrificed. In the first place the series loses its value as material for the historian. No historical writer will be satisfied to use a text thus modified, and he will have as before to go back to the manuscripts. Yet this should be the most permanent and essential use of such publications. Secondly, the documents lose all their philological interest. And lastly, we lose the sense of verisimilitude, of reality, when the documents instead of preserving their original ruggedness are all reduced to the dead level of modern correct spelling and English phraseology. It would have been far better to give the documents in their original form and then, if it were deemed necessary, to accompany them with a translation or modernization.

"The History of the Royal Navy" is the most extensive

work in its field, but some of those which have appeared simultaneously with it are better, though shorter, especially the books of Mr. Corbett and Mr. Hannay¹.

During the same period there have appeared numerous articles in the "English Historical Review" by J. R. Tanner and M. Oppenheim, two papers in the "Proceedings of the Royal Historical Society," and last, but by no means least, two more books by Captain Mahan. The cause of the sudden prominence of the history of the navy is a problem of some interest. Is it a reflex of the interest in "The Empire," and are the books named, therefore, the natural successors of Seeley's "Expansion of England," Dilke's "Problems of Greater Britain," and "The Seven Seas"? Or have the efforts of other nations to create greater navies turned the thoughts of Englishmen to the great deeds of their own? Or is it simply that it is a branch of the history of the nation that has by some chance been neglected and into which the historians have, therefore, now rushed with all the zeal of the explorer? Whatever may have been the ultimate origin of this movement, a very interesting proximate cause is the influence of the American writer, Captain Alfred T. Mahan. His "Influence of Sea Power upon History, 1660-1783," which was published in 1890 and has since passed through some fifteen editions and several translations, was the first of a group of works which have all been dominated by a set of strongly original ideas, and marked by great breadth of knowledge, impartiality of interpretation, and vigor of style. The interest which this first volume awakened was probably even greater in Europe, especially in England, than

(1) Julian S. Corbett, *Drake and the Tudor Navy, with a History of the Rise of England as a Maritime Power*, London, 1898; David Hannay, *A Short History of the Royal Navy*, vol. 1. 1217-1688, London, 1898; other works are Hamilton Williams, *Britain's Naval Power, A Short History of the Growth of the British Navy*, London, 1894; Earl Camperdown, *Life of Admiral Duncan*; T. A. Spalding, *Richard Badeley*, Westminster, 1899; C. de La Roncière, *La Quatrième Guerre Navale, entre la France et l'Angleterre*, Paris, 1899.

in America. It was followed by a volume practically in continuation, which struck still nearer home in Great Britain, "The Influence of Sea Power upon the French Revolution and Empire." His "Life of Admiral Farragut" was of more local interest in his own country, but his next work¹ served almost as a revelation at once of a great man and of a great element in modern history. Nelson was, as Captain Mahan says, "the man for whom genius and opportunity worked together," to make him an embodiment of the great possibilities of influence on the course of human history of national wealth, organization and determination, combined with individual ability, put into the form of a navy, and utilized in critical times of national conflict. With this power and its influence Captain Mahan is enamoured. He is deeply impressed with the enormous influence on the course of international relations, and, therefore, to a considerable extent on the course of national development, which "sea power" has exerted. He sees in the work of the navies of Europe and especially of that of England the mould that has given to the nations the actual form which they have taken. This dominating belief, strong, personal, abundantly supported with minute knowledge of the facts of naval and biographical history, and nobly embodied in an individual character so simple and so great as that of Nelson, furnishes the subjective element in the unquestionably great book which Captain Mahan has written. In the objective material he has been fortunate. Nelson left a vast mass of correspondence, official and private; the State Papers are available, and the form which the book should take was, therefore, a matter of personal choice on the part of the author. He has followed the plan of forming in his own mind a complete conception of Nelson's character, his career, his relations to the events with which he was connected, and of the significance of all these things to the world, and has

(1) Alfred T. Mahan, *The Life of Nelson, the Embodiment of the Sea Power of Great Britain*, Boston, 1897. Second Edition, 1899.

then developed this knowledge in a narrative, in the main chronological, but frequently modified by the wider knowledge and conceptions of the general plan. If Nelson, like an earlier admiral, wished for a biographer who would "nothing extenuate nor aught set down in malice" he has found him in Captain Mahan,—witness the author's treatment of the whole matter of Nelson's relations with Lady Hamilton. Captain Mahan has found it practicable, in the main, to give a history of the navy during this period at the same time that he is writing a biography. More than this, the larger idea under the domination of which he is writing, pervades and broadens and in a certain sense uplifts the whole work. It is this which has given its influence to the book; not his knowledge of the subject, though that is full and adequate, nor his candor, though that is all but perfect, nor the insight into motives and causes, nor the technical exactness of statement, nor even the spirit and life of the narrative, but the element of universality, the idea that it is on the sea that the destinies of modern nations have been settled and probably will be settled, and the success with which this belief gets itself accepted by his readers.

Captain Mahan's latest work¹, which has just been published, is of special value, since its author was a member of the strategy board at Washington, and, therefore, speaks of recent occurrences with a certain amount of official authority. Of those essays in the book, however, which enter upon questions of the broader policy of imperialism and its ethics, the interest may be as great but the value is certainly less, for the author is no longer on the ground of the naval historian or naval philosopher, but of the moralist, even frequently of the casuist. The domain of "sea power" has been deserted for the discussion of the ethics of power in general, of the rightfulness or the wisdom of going to war, of the rights and wrongs of nations and individuals.

(1) *Lessons of the War with Spain and Other Articles*, Boston, 1900.

All roads lead to Rome; and we are brought back as usual from specific questions to the general story of the destinies and exigencies of the life of the race, in the present, the past or the future. There will probably never be a time when history is not written and read in its general development, by periods as well as by aspects, or as a study of institutions. There has not been wanting in recent times certainly an appreciable number of books covering with more or less detail the consecutive history of England for some longer or shorter period, in all the subjects usually included in historical narrative. These are of course not so numerous as they have been in the past. Few men who are influenced by the modern critical spirit, and who realize the amount of source material that can and must be used, have the courage to undertake to write the history of any long continued period. When the material has been brought into more available form, when many more monographs have been written, and when we have reached some more satisfactory conclusions as to what is and what is not to be included under the term history, we may come again to a period of production of continuous histories of long periods or even of general histories. At present those approximating this ideal are exceptional, not typical or really characteristic of current historical work.

Nevertheless, the exceptions are of considerable importance and interest. The most extensive, most ambitious, and in some respects the most important of such general histories, which has appeared recently is Sir James H. Ramsay's "*Foundations of English History*¹." This is in reality another instalment of the work of which his "*Lancaster and York*²," published some years ago, was the first; and he intimates that he is engaged in preparing another section on the period of two hundred and fifty years

(1) Sir James H. Ramsay, *Foundations of English History*, B. C. 55 to A. D. 1154, London, 1898.

(2) *Lancaster and York*, Oxford, 1892.

intervening between the close of this last and the beginning of his earlier work. Some parts of his book are the results of absolutely original research, other parts follow the lines laid down by other writers, though probably at very few places does he neglect to verify their use of the original authorities, of whom he gives a most valuable list in an appendix. His most original contributions are those which are drawn from Celtic sources and those which bear upon purely military history. His account of the Roman period taken all together is the best now in existence. The weakest portions of the book are the analyses of institutions, which are somewhat perfunctory and frequently repeat discredited theories. Of the value of this whole work there can be no doubt. It is learned, trustworthy, clear. It gives us practically all the knowledge that exists on the period of which it treats, except of course for the minute details of individual cases. Moreover, its value is of a kind by no means common. Its most natural use is as a book of reference, and used in this way it gives ever recurring satisfaction by its invariably rational and moderate treatment of every question as it arises. The criticism which the work has in most cases received has referred to its extreme heaviness, its entire lack of vivacity, its want of interest.

But such a criticism only brings us back to the question how history is to be defined. One of the oldest forms of literature, one of the earliest fields of inquiry, one of the most perennial objects of human interest, history is still in an equivocal position, its place among the sciences or arts ill defined and its ideals vaguely and variously conceived of. If history is to be a form of literature, such books as that of Sir James Ramsay fall far below the standard that should be insisted upon. Indeed most modern scientific historians are failing deplorably to make their work interesting, polished, or otherwise equal to literary-historical standards already in existence. If, on the other hand, history is not a branch of literature, if the duty of the historian is simply

to discover his facts, to put them together in such an order and arrangement as will explain the relations between them, just as a biologist, a geologist, or a philologist does, then the critic has no right to complain because the result is not a vivacious narrative, and the personalities of history are not clearly marked. It may simply be that the material left us concerning a certain period is quite insufficient to produce a complete narrative or explain a given character or career.

There are, indeed, but few evidences of any effort for literary form among English or German students of English history, and French historians, whatever their success in settling the problem, are not writing to any appreciable extent in this field. Yet there is one recent book of such great interest and brightness, notwithstanding its scientific method, as almost to overthrow this generalization, Trevelyan's "England in the Age of Wycliffe," which contains a detailed account of the Peasants' Rebellion, of the party politics, and of the religious conditions and contests during the last quarter of the fourteenth century. But the events of this period are so dramatic, the sources so picturesque that the historian could hardly help giving an animated even though scholarly account of it. The accompanying volume of documents² edited by Mr. Trevelyan and Mr. Edgar Powell conjointly is welcome, though it is overshadowed by a great French work which so nearly includes it³. The fact that the edition of this last work was exhausted almost immediately testifies alike to its merits, to the prevailing interest in the history of the masses of the people, and to the dullness of historians in their long failure to appreciate the dramatic character of the fourteenth century.

(1) George Macaulay Trevelyan, *England in the Age of Wycliffe*, London, 1899.

(2) Edgar Powell and G. M. Trevelyan, *The Peasant Rising and the Lollards*, London, 1899.

(3) André Réville and C. Petit Dutailis, *Le Soulèvement des Travailleurs d'Angleterre en 1381*, Paris, 1898.

. Midway, however, between the two ideals of history as a mere scientific exposition and history as a branch of literature, lies the greatest English historical work now in process of publication, Gardiner's "Commonwealth and Protectorate." For more than twenty years this scholar has been writing on the seventeenth century. After his early group of studies on special periods, he has, in three successive works¹, given the most learned, philosophical and continuous account of the history of that century, down to the year 1654, that we have in existence. Many other historians, among whom Mr. C. H. Firth is most prominent, have entered upon this field since Mr. Gardiner first made it his own, but his mass of production, the increasing vigor of his treatment, and above all the fact that he has come in regular course to deal with Cromwell's great personality, have kept him still easily master among them.

Cromwell may be looked upon as the hero of the hour in historical biography. Carlyle's work probably first made Cromwell an interesting character to his countrymen. Since that time the interest has hardly flagged, and at no time has it been so great apparently as at present. Frederic Harrison's "Cromwell" passed through edition after edition from 1888 onwards; Gardiner's Oxford Lectures on "Cromwell's Place in History," delivered in 1896, have similarly been reprinted repeatedly; within the last year have appeared numerous books² and several detailed studies in the "Proceedings of the Royal Historical Society";

(1) Samuel Rawson Gardiner, *A History of England from 1603 to 1642*, New Edition, London, 1895; *A History of the Great Civil War, 1642-1649*, New Edition, London, 1897; *A History of the Commonwealth and Protectorate, 1649-1660*, vols. i. and ii. London, 1897.

(2) Especially G. H. Pike, *Oliver Cromwell and His Times*; Sir R. Tangye, *The Two Protectors, Oliver and Richard Cromwell*, London, 1898; S. Freiherr von Bischoffshausen, *Die Politik des Protektors Oliver Cromwell*, Insbrück, 1898; Colonel T. S. Baldock, *Cromwell as a Soldier*; and S. R. Gardiner, *Cromwell*, London, 1899.

while the two articles by John Morley and Theodore Roosevelt are still in progress in two of our most widely read periodicals. In fact, Cromwell is the successor of Napoleon and Bismarck, in that somewhat fleeting reign over men's interest which has its throne in the popular magazine.

It is perhaps too early to judge, but it must be confessed that there is a general feeling of disappointment in Mr. Morley's work. It has but little of the lightness of touch, the vivacity, the keen philosophy of his "Voltaire" and "Rousseau." But this is probably the fault of the subject rather than of Mr. Morley. The Protector had none of that cosmopolitanism and universality of character which make a great man sometimes almost independent of his time and his country and enable his biographer to treat him apart from the conditions that surround him. Cromwell's character and action depended from moment to moment on the development of the drama of which he was a part. It is, therefore, necessary to describe and analyze patiently and sometimes painfully the other factors of seventeenth century English history in the process of delineating the figure of the hero himself. Hence, no doubt, the length, the cumbrousness, the lack of picturesqueness in Mr. Morley's somewhat labored biography. Indeed the whole body of Cromwell literature will reward the serious student more than it will the general reader.

Such are the principal representative works in the three classes into which we have grouped the recent books on English history; the history of institutions, naval history, the history of definite periods. Finally, a word as to the general value of English historical work during recent years. It cannot be said to rank high. It cannot compare with that of Germany or France, possibly not with that of the United States. The number of books of serious historical value is relatively small. The amount of scholarly investigation into historical problems is not nearly so great as in the neighboring continental countries. The publication of source material in accessible form proceeds very

slowly. It is, moreover, remarkable how little interest or attention is given in England to the methods of historical research, construction, or even teaching. England produces great historical works from time to time, because very able men have devoted themselves to history. Some good editing is done because there is a great wealth of material, and patient laborious workers are never entirely lacking. But the development of scientific methods of doing the work, training in historical work, coöperative work, any recognition that there is a trade of the historian which can and should be learned, is remarkably slight. The great energy and ability of the English race assert themselves in the writing of history as in other directions, but the slowness to adopt scientific improvements and the materialism which interests itself so much in results that it does not stop to perfect its processes show themselves here also.



THE FRENCH DRAMA AT THE END OF THE CENTURY

BRANDER MATTHEWS, *Columbia University.*



IN his essay on Gray, Lowell said: "Let us admit that the eighteenth century was, on the whole, prosaic, yet it may have been a pretty fair one as centuries go," and he added, with characteristic shrewdness, "every age is as good as the people who live in it choose to make it, and if good enough for them, perhaps we, who had no hand in the making of it, can complain of it only so far as it had a hand in the making of us." Now as the nineteenth century is leaving us forever, let us admit that it has been a pretty fair century on the whole,—not prosaic like its predecessor, which had a hand in the making of it, but essentially poetic, as perhaps no earlier century can have been, in so far as vast vistas of speculation have been suddenly disclosed to the mind of man. A practical century, it has been, no doubt; but then every other century must also have been practical, since the day's work had always to be done. Never before has man been less bound down to mere journeyman labor; never before has life been so strangely interesting, with so constant a succession of surprises, due to our conquest of nature and to our expansion of knowledge.

It may be that the twentieth century,—which the nineteenth has had a hand in making,—will be prosaic again, that it will

settle down and seek to set in order what its predecessor has poured out lavishly, that it will be content to live in the past rather than in the future, that it will be critical rather than creative. Should this come to pass, the critics and the commentators will find ready for their investigation and evaluation a certain number of movements more or less complete in the hundred years that followed 1800,—movements of less importance, indeed, than the Renaissance or the Reformation or the Decline and Fall, but none the less, well worthy of enquiry and analysis. For example, the rise of Transcendentalism in the United States and its effect on American character,—here is a theme to be handled satisfactorily only after a due interval of time. As M. Jules Lemaître has assured us, “criticism of the works of yesterday is not criticism ; it is conversation”—a harsh saying this to come from the author of “*Les Contemporains*.” Again, the final weighing of each of the remarkable group of British writers whom we are wont to call the Victorian poets and the investigation of the true relation of each of them to the others—here we have a subject likely to task the best critical faculty of the twentieth century. And a third theme, as rich as either of the others, I think, and as tempting, can be discerned in the development of the drama in France during the half-century that stretches from 1830 to 1880.

All that took place in the playhouses of Paris before the first performance of “*Hernani*” may be regarded as but the preparation and the prelude of that startling event ; and all that has happened there since the first performance of “*Le Monde où l’on s’ennuie*” cannot be considered as of primary importance in itself, for no one of the plays of the final twenty years of the century is epoch-making,—no one of them has more than a secondary importance as it either continues the tradition of the 1830-1880 period or more or less obviously protests against that tradition. The romantic movement made smooth a path for the realistic movement that followed it inevitably ; and Hugo and the elder

Dumas lived to see their formulas and their philosophy disestablished by Augier and the younger Dumas. But in the final decades of the century it was seen that realism had spent its force, and yet no new movement had swept forward to renew the drama again. No new man has come boldly to the front to declare a fresh set of principles and to impose his formulas and his philosophy upon his more impressionable contemporaries. The last twenty years of the century are not so blank as were the first thirty,—from which little or nothing now survives; but they supply us with scanty indication of the lines along which the drama is likely to modify itself in the immediate future.

The year 1830 is still a date to be remembered, and the battle of "Hernani" remains a picturesque episode in literary history; and yet, as we look down on the struggle now from the height of the three score years and ten that have elapsed,—the span of a man's life already,—the conflict seems petty and the result inconclusive. The Classicists were feeble folk, all of them, and they had no strength to withstand the first onslaught; there was no life in them or in the theories which they thought they were defending; they were dead, even if they did not know it. What vitality can there be in a criticism which asserts that tragedy must fulfill twenty-six conditions, while comedy need fulfill only twenty-two and the epic only twenty-three,—and which is ready with a list of the twenty-six conditions, the twenty-two, and the twenty-three? What real glory is to be gained by overcoming antagonists as pettily pedantic as these?

The Romanticists began bravely, but they did not persist. They routed the Classicists readily enough, but when their foes were overthrown, they did not press on to other victories. They were content to rest on their laurels; and very early did keen critics discover the inherent weakness of their attitude. Maurice de Guérin, for example, said that Romanticism had "put forth all its blossom prematurely, and had left itself a helpless prey to the returning frost." The real reason for this sterility

was that the core of Romanticism was revolt. In so far as it was destructive, it was successful; and it did not really set out to be constructive. As M. Souriau points out in his acute and scholarly edition of the "Preface of Cromwell," Romanticism "is rather a reaction than a renaissance"; and he quotes from the elder Dumas to the effect that in those days the ardent young fellows were in doubt as to what they wanted, but they were in no doubt as to what they did not want.

Not only were their literary doctrines negative rather than affirmative, but they strove to throw off all restraint and to denounce all rule. As a typical hero, they were prone to present an outlaw, who added to acts that were illegal, a birth that was illegitimate and loves that were illicit. *Hernani* is a bandit and Antony is a bastard. To the men of 1830 the most complex problem of all times was simple; they saw no difficulty in the relation of man to society and in the proper restraint of the right of the individual to assert himself, when his self-assertion may be harmful to the community. They proclaimed the complete liberty of the individual; and they never declared the duty of every man to sacrifice himself, if need be, for the good of all the rest. Carried to their logical conclusion, their principles led straight to anarchy, with every man a law unto himself. As Thiers said in 1871, when the French republic was fighting for its life, "The Romanticists—that's the Commune"!

Much high-flown eulogy of the famous books of the past is as unimpressive now as the perfunctory flattery of an epitaph in which manifold and contradictory virtues are imperishably inscribed. The praise is all very well in its way, but the real question is, does the famous book keep on being read? The proof of the play is the acting. After two centuries the one or two masterpieces of Corneille and the two or three masterpieces of Racine still hold the attention of French playgoers. But of all the plays of the elder Dumas none keeps the stage to-day,—except possibly one or another of his lighter comedies in which the Romanticism

has been reduced to the vanishing point. Of all Hugo's dramas in prose and verse only "Hernani" and "Ruy Blas" survive in the theatre. Here the selection of time seems as satisfactory as it always must. These are the two plays in which Hugo's merits are most abundantly displayed, and in which his demerits are diminished. They in their turn are beginning to be considered as classics. It was Goethe who declared that the important point for a work of art is that it should be "thoroughly good, and then it is sure to be classical. I call the classic healthy, the romantic sickly." Perhaps it is a little difficult to assert that "Hernani" and "Ruy Blas" are really healthy in tone; but there is no doubt that they are the least sickly of all Hugo's plays.

One may wonder what Goethe would have thought of the Realistic movement that followed the Romanticist. Would he have relished Balzac? Would he have found "Madame Bovary" healthy? How would he have enjoyed the "Demi-Monde" of the younger Dumas and the "Gendre de M. Poirier" of Augier and Sandeau? Recalling Goethe's profound delight in Molière, we may guess that the "Gendre de M. Poirier" would have pleased him. But while the "Demi-Monde" would have interested him, indubitably, we cannot be sure just how the author of "Elective Affinities" would have taken it. Of this thing, however, we may be certain—Goethe would have seen and acknowledged the dramaturgic skill of Augier and the younger Dumas, for he had the craftsman's liking for technique.

Less gaudy than Romanticism but richer as a topic for investigation is the history of the so-called "well-made play,"—*la pièce bien faite*. As it happens, we can trace almost every step in the career of this formula,—its beginning, its rise, its development, its modification, and its decadence at last. Suggested, perhaps, by Beaumarchais, the form was carried to the highest point of mechanical complexity by Scribe; then it was simplified by the younger Dumas and accepted by Augier, having Sarcey for its press-agent; until, in the end, it wore out its welcome and was

rejected of the Théâtre Libre, which refused to be bound by any formula whatsoever.

What is the formula of the well-made play ? When Regnard, who followed in Molière's footsteps more faithfully than he knew, imitated the master also in writing a critique on one of his comedies that had been attacked, he tried to show that the first act of his play "exposes the subject ; the second ties the knot ; in the third the action begins ; it is continued in the following acts ; everything concurs in the event ; the complication grows until the final scene ; the dénouement is drawn from the heart of the subject." Here Regnard comes very near to giving us the definition we seek. A well-made play is a piece having a beginning, a middle, and an end, (as every work of art ought to have,) and containing nothing that does not help in the movement of the plot. In a perfect play of this type, every scene is carefully prepared for, and led up to, and so is every character ; every situation inherent in the theme is treated in its proper place and in its due proportion ; there are no digressions, however alluring the opportunity ; and nothing is allowed to interfere with the more or less intricate convolutions of the plot. Such a play is the "Bataille de Dame," of Scribe and Legouv  , or the "Pattes de Mouche" of M. Sardou. Such a play at its best is likely to be a marvel of ingenuity in invention and construction. Such a play, when its writer was not a master-mechanic or was not at his best, is likely to be hard and dry, empty and unsatisfactory.

It was Scribe who had perfected this mechanism, and who applied the formula most rigorously. The best of Scribe's plays are masterpieces of dramaturgy ; but the breath of life is not in them. He delighted in dexterity for its own sake ; and in his eyes the playwright was a rival to the juggler who keeps three brass balls in the air with one hand, while with the other he spins a bowl on the end of a rod. Mere craftsmanship can go no further ; but while he was playing his tricks, the drama was getting divorced from literature. Yet the influence of Scribe

was so potent toward the middle of the century, and he had so completely succeeded in imposing his standards upon the play-going public that even authors of marked individuality, men who looked at life with their own eyes, Augier and the younger Dumas, could not help following in his footsteps, even when they were resolved to go their several ways. A certain artificiality, a certain theatricalness, a certain complacency in adroitness, which we discover now and again even in their best plays, may be set down as the result of the overwhelming vogue of Scribe in the days when Augier and Dumas began their careers as dramatists.

Although a humorist, like Labiche, and a pair of wits, like Meilhac and Halévy, chose to learn the formula of the well-made play and could apply it when they saw fit, they rebelled against its restrictions, which irked their vagabond fantasy. In some of their more frolicsome pieces they refused to be bound by it. They reverted to more primitive and easier formulas, like that which Molière had been content to employ in one or another of his earlier pieces, the "Étourdi," for example, and the "Facheux,"—before he had learned how to achieve the solid structure of "Tartuffe." They did not develop their theme with narrow and inexorable logic—rather did they play with it, showing now this aspect of it and now that. The "Chapeau de paille d'Italie" of Labiche and the "Boule" of Meilhac and Halévy are each of them a sequence of comic scenes, having about as much unity as a string of sausages. They are humorous panoramas of life rather than organic comedies. Their plots are so loosely knit that almost any act might be omitted without being missed. And no doubt not a little of the freshness and the frank fun of these pieces is to be credited to the refusal of their authors to accept the limitations of the well-made play.

The partnership of Meilhac and Halévy had been dissolved when the century had nearly a quarter of its course to run, and at the very moment when the full effect of the plays they had produced was beginning to be visible. As it happened, the realist

novel was just then entering on its period of vogue ; and under the lead of Daudet and Zola, not a few of the younger story-tellers came to believe that the background was quite as important and as interesting as the grouping of the characters themselves. This could not but have its echo on the stage also. Yet it is chiefly to the influence of Meilhac and Halévy that we must ascribe the fragmentary construction which is to be observed in many of the pieces performed during the final years of the century. But whereas the authors of "Froufrou" had known from their youth up what the well-made play was, and what were the principles of its construction, even though they often preferred to depart from the formula, their later followers, M. Henri Lavedau, for instance, and M. Maurice Donnay, have not mastered the art of play-making in the same severe school. These younger men, clever as they are, and witty and observant, have to be contented with a casual structure because they do not know any better. Their works are therefore a little too sketchy ; they are a little too lavish of minor details ; they are frequently over-neglectful of the main subject and over-willing to sacrifice the essential scene for the accidental effect. They have not gone quite so far as the even more ignorant enthusiasts of the Théâtre Libre who took the final step, and at one fell swoop cast aside all the accepted principles of the dramatic art as well as all the ordinary decencies of life, and whose plays are many of them to be described as unactable, unreadable, unspeakable.

Underlying the formula of the well-made play was a sound principle, which the dramatist can disregard only at his peril. This principle is as old as Aristotle, who tells us that the plot " must have for its object a single action, whole and complete, with a beginning, a middle, and an end ; that like a single living organism, it may produce its appropriate pleasure." What Scribe and his disciples did was to cramp the drama by applying this principle too narrowly. The principle itself is one which every great dramatist has accepted and obeyed,—Sophocles in "Œdipus the

King," and Shakespeare in "Othello," no less than Molière in the "Femmes Savantes," and Ibsen in the "Ghosts."

As Aristotle was the critic and theorist of the Greek drama so the late Francisque Sarcey was the critic and theorist of the French drama of the nineteenth century. Toward the end of his career, it is true that his mind lost a little of its former flexibility; but this is only what often happens to old men. He was the most philosophic of all critics of the acted drama since Lessing. His code of maxims was not made up out of his own head arbitrarily, or taken over second hand from the books of his library; it was derived,—like Aristotle's and like Lessing's also,—from a long continued, very careful, and most conscientious study of the theatre of his own time. He had the equipment of a scholar and the insight of a true critic. He was extremely expert in disentangling the real point at issue and in applying to it the decisive principle. More than one of the commonplaces of current French dramatic criticism was an original discovery of Sarcey's.

For example, a favorite phrase of his was to the effect that in a given play the author had or had not shirked the scene he ought to have treated, the *scène à faire*, the scene that must be in the play. Here Sarcey condensed into three words an inviolable principle of dramatic construction, that the essential situation of the story must be shown on the stage in action. If the subject calls for a meeting of two characters at the crisis of the piece, this meeting must take place in sight of the audience. It can not pass behind closed doors or between the acts; it can not be told by a messenger; it must be seen and heard directly by the spectators, who are expecting it, although, of course, they do not know just what it is they do expect. If it is not presented to them, they will be disappointed; they will feel vaguely that they have been balked of a pleasure somehow, and they are dissatisfied. Perhaps one reason why Sarcey esteemed the well-made play so highly is that it is always certain to contain the one or more

scènes à faire implicit in its theme. The scene in which Iago distills the poison of jealousy into the ear of the unsuspecting Othello,—the scene in which Tartuffe makes love to Elmire while Orgon is hidden under the table,—the scene in which Lady Teazle tells the truth to Sir Peter after the screen has fallen,—all these are *scènes à faire*. In the final analysis, what we seek in the theatre is the pleasure the art of acting can bestow ; and it is the earmark of a genuine *scène à faire* that it always gives the actors their best chance.

The success of the “*Étourdi*” and of the “*Chapeau de paille d’Italie*” shows that the comic dramatist need not always follow the formula of the well-made play ; but in the final years of the nineteenth century in Paris, the failure of many a comedy brisk with incident and character and bristling with witty speeches is proof that a comic dramatist can disregard the *scène à faire* only at his peril. Of course, plot-making can be overdone, as Scribe exemplified ; but it can be underdone also, as only too many recent French plays make evident. The proper protest against the undue insistence upon mere mechanical ingenuity has led to a loose slovenliness of form, which in its turn is bringing about a reaction. The French, after all, are very Latin in their likings ; they joy in beholding the orderly framework of a play put together in due obedience to the traditions of the craft. They may tolerate a laxity of structure sometimes, but they do not really admire it. The reaction against the happy-go-lucky method of play-making is likely also to be aided greatly by the strong impression which Ibsen’s social dramas have made upon the Parisian public, and the high esteem in which the Scandinavian dramatist is held by the more serious of the French critics.

No modern literature has been less swerved aside by foreign example than the French ; and none has gone on its own way with less hesitation ; and yet in the course of history French literature has received a succession of vivifying shocks from one foreign source or another. In the Renaissance it was Italy that gave this

stimulus ; to Corneille it came from Spain, and to Rousseau from England ; the share of Germany in bringing to pass the Romanticist revolt is large enough, although perhaps not to be declared with precision. The latest irritants come from still further North,—from Russia and from Scandinavia. Just what effect the example of Tolstoi will have on the French drama no one can even venture to guess now ; as the Russian is known chiefly as a novelist and scarcely at all as a dramatist, his influence on the writers of plays is likely to be somewhat indirect,—although to say this is not to say that it may not in time prove to be very powerful. Yet I doubt if it will be very potent, except in so far as his broad toleration, his immense sympathy, his abundant compassion, may be contagious and may help to soften the hardness and the contempt which are marked characteristics of the writings of Flaubert and of his school. On the whole, Tolstoi's ideal is too remote from that of the French themselves, for them to be able to cherish it and to adopt it.

But Ibsen is a dramatist ; so far as mere dramaturgic skill goes, he is one of the greatest of all dramatists. Almost every one of his social dramas has been performed in Paris ; and even though some of them have been acted but two or three times, still they have been seen on the stage,—the only true proving-ground of a genuine dramatist's work. Few of these plays really pleased the Parisians,—and why should they ? Ibsen is not Gallic, but very Scandinavian ; he is not at all gay, indeed he is austere. But after they had seen a certain number of these Scandinavian austerities, they came away dissatisfied with the ordinary Parisian play. However unacceptable their ethical code may seem sometimes to us Anglo-Saxons, the French are moralists to the marrow ; and what they seek on the stage is “ a picture of life,—which is also a judgment.” They may not have recognized the picture of life to which Ibsen called their attention, and they may have refused to accept his judgment on the case presented ; but they could not but see where Ibsen had set a higher standard, ethically and æsthetically, than their own later dramatists.

The symbolism, the vagueness, the mysticism,—which to many of us are the least interesting phases of Ibsen's later works,—puzzled the Parisians repeatedly. Many of the characters he had projected into life were far too bold and reckless in asserting their right to live out their own lives in their own way, to please a people governed by the social instinct as the French are. The occasional morbidness, the lack of wholesome material sometimes, the merely Scandinavian problem presented once or twice in place of one of the eternal and universal puzzles of human existence,—all these things tended to disconcert the French play-going public. But no people could more heartily appreciate Ibsen's merciless logic and his severity of form.

It may be fanciful in me, but I have always wondered whether or not the social dramas of Ibsen are what they are, because the militant comedies of the younger Dumas preceded them,—just as these comedies in their turn are what they are because they had for forerunners Scribe's ingenious plays. Scribe had a complexity of plot, and, so far as may be, no moral whatsoever. Dumas did away with the half of Scribe's machinery; and he insisted on pointing the moral, getting up himself to declare it, if occasion served. Now Ibsen has gone a step further, profiting by the labors both of Scribe and Dumas, and having studied their works diligently. He is now able to make the plots of his plays seem perfectly simple, although, as a matter of fact, they are often very elaborate; and the moral which is explicit in Dumas, Ibsen has intensified by keeping it implicit. His craftsmanship is so masterly that the French are glad to claim it; Sarcey called the "Doll's House" a French play,—except in the arbitrary departure of Nora in the final act.

This mastery of dramatic form is another quality of Ibsen's which the next generation of French playwrights will probably seek to acquire. Already has M. Paul Hervieu, in the "Loi de l'homme," and in other pieces, succeeded in attaining a certain plain simplicity, not unlike Ibsen's. Perhaps also the directness

of one or two of M. Jules Lemaître's plays may be ascribed likewise to Ibsen's severe example. But it is hard for M. Lemaître to lay aside his irony; and irony,—not the tragic irony of Sophocles, but the disintegrating comic irony of Renan,—is fatal to the success of a dramatist. No audience is willing to be laughed at; it has not paid its money to serve as a butt. That Ibsen is somewhat deficient in humor is probably to his advantage. Certainly no taint of comic irony ever mars the force of his straightforward sincerity.

Perhaps the French do not find a complete satisfaction in the solutions that M. Harvieu and M. Lemaître propose for the problems they have propounded. But, Ibsen has not always solved those he has presented, as Mr. Howells reminds us:—

“It is not by the solution of problems that the moralist teaches, but by the question that his handling of them suggests to us respecting ourselves. Artistically he is bound, Ibsen as a dramatist is bound to give an æsthetic completeness to his works, and I do not find that he ever fails to do this; to my thinking they have a high beauty and propriety; but ethically he is bound not to be final; for if he forces himself to be final in things that do not and can not end here, he becomes dishonest, he becomes a Nordau. What he can and must do ethically, is to make us take thought of ourselves, and look to it whether we have in us the making of this or that wrong; whether we are hypocrites, tyrants, pretenders, shams, conscious or unconconscious; whether our most unselfish motives are not really secret shapes of egotism; whether our convictions are not mere brute acceptances; whether we believe what we profess; whether when we force good to a logical end we are not doing evil.”

The most popular play of the final decade of the century presents no problem whatsoever and avoids any criticism of life. Apparently its author has never heard of Ibsen and never seen any play by the younger Dumas. He has not taken his stand on firm reality, but has preferred to build an airy fantasy,

as unsubstantial as it is charming. His aim has not been to enlighten but merely to entertain; and he has accomplished his purpose superabundantly. Since "*Hernani*" no play has been so enthusiastically acclaimed at its first performances as the "*Cyrano de Bergerac*" of M. de Rostand, its humorously poetic hero being acted with incomparable variety by the most accomplished of contemporary comedians, M. Coquelin. This play which pleased many thousands of spectators not only in France but also in Germany, in Italy and in America, was joyfully hailed by certain Parisian critics as the harbinger of a new springtime for the French poetic drama. M. Rostand was welcomed as a reviver of the best traditions; and he was eulogized as one who,—like Corneille with the "*Cid*" and like Hugo with "*Hernani*,"—had set a new model which later dramatists might vainly strive to surpass.

It may be bad manners to look Pegasus in the mouth or to smile at the cooing murmurs of delight that run round the *Porte Saint Martin* at the exquisite delivery of a mellifluous couplet; and there is no disputing that "*Cyrano de Bergerac*" is very clever and very adroit, that it has color and vivacity, that if it lacks passion, it has at least sentiment, that if it wants real action, it has abundant movement, and, above all, that it makes an extraordinarily wide appeal—to those who like lovemaking and romance, to those who relish easy wit and lively humor, and to those who revel in combats and in the peril of life and death. But it cannot fairly be called an epoch-making novelty. It is, instead, an old thing done in a new way. The plot is put together by a playwright who has absorbed every device of the elder Dumas, and the verse is written by a lyricist who has learned every trick of the Parnassians. It is, in short, an old-fashioned piece,—but with all the modern improvements.

An adverse critic might suggest that M. Rostand had used his story to display his verbal virtuosity. He has a very pretty lyric gift,—always a rare endowment among the French. He can

touch wit with sentiment, and he can thrust a hint of pathos into an extravagant simile. He combines clearness and elegance, and his verse is both facile and finished. The quality of his poetry is almost exactly that of the *vers de société*,—the verse in lighter vein of Prior and Mr. Austin Dobson, of Locker and Dr. Holmes. M. Rostand is brilliant and buoyant as Præd is, for example; and Cyrano's description of a kiss may be compared curiously with the stanza in the "Chaunt of the Brazen Head," in which the lyrist liltingly tells us what he thinks of love.

"Cyrano de Bergerac," for all its bravery of epithet and all its briskness of motion, is at bottom too slight a thing to serve as the cornerstone of a new school. It contains no promise of future development, nor do the author's other plays, less corruscating than "Cyrano," but possessing the same qualities. And even in "Cyrano" itself, there is no character of real originality or of genuine verity; it is peopled only by the masks of the stage. The play itself lacks depth and breadth; it is without ultimate sincerity; it has as its basis an unworthy trick, and it holds up before us as a hero whom we are to honor with our approval and with whom we are expected to sympathize, a man engaged in deceiving a woman into a marriage certain to bring her misery so soon as she discovers, though too late, the dullness of the man she has wedded. M. de Rostand's play is clean externally, but it is essentially immoral,—in so far as it erects a false standard and parades a self-sacrifice which, to use Mr. Howells's apt phrase, is "a secret shape of egotism."

Whatever the real value of "Cyrano de Bergerac," it is not to be denied that it was the last play of the nineteenth century to achieve a triumph at once immediate and wide-spread. Yet there is no dispute about the fact that it stands frankly outside the line along which the French drama has been developing in the past fifty years. M. Rostand's piece is not "a picture of life, which is also a judgment"; and unless it is this, no play is likely long to satisfy the French. That is what we find in the

“Tartuffe” of Molière, in the “Mariage de Figaro” of Beaumarchais, in the “Demi-Monde” of Dumas *fils*, and the “Gendre de M. Poirier” of Augier and Sandeau. It is what we find in the plays of M. Paul Hervieu, on the one hand, and, on the other, in those of M. Henri Lavedau.

If we may guess at the future from our knowledge of the past, we must expect that the masterpiece of the French theatre in the twentieth century will be like those of the nineteenth century and of the eighteenth century and of the seventeenth. It will be a comedy almost on the verge of stiffening into the serious drama. It will deal gravely and resolutely with life, but it will also be charged with satire and relieved by wit. Perhaps it will not be robustly comic;—but is “Tartuffe” really so very laughter-provoking? Its subject will be logically thought out and symmetrically presented,—for the dramatic anarchists of the Théâtre Libre are already routed and dispersed. Its craftsmanship will be sure; and it will have the prime merits of simplicity, of straightforwardness, and of sincerity.



COMMENTS ON THE WAR IN SOUTH AFRICA

CAPTAIN E. L. ZALINSKI, U. S. A. (*retired*).



HERE has been much surprise expressed at the fact that the Boers have been able thus far to apparently hold their own in their contest with the great British Empire. It is not fair, however, to consider the contest, at its opening, from the standpoint of the relative populations and wealth of the two combatants. In the one case, all the forces available were directly at hand, whilst in the other, they were six thousand miles away. On the one side, preparations have been made for a number of years, looking to this conflict. On the other side, there does not appear to have been any special preparation. The conflict was unavoidable, and should have caused the British military authorities, especially its Intelligence Department, to gather full information regarding the characteristics and details of the terrain over which conflicts were likely to take place.

Inasmuch as, up to recent date, the conflict has been entirely on British territory, there is no reasonable excuse for the lack of information, in so far as this part of the theatre of war is concerned. Neither would it have been impossible to have secured a fair knowledge of the conditions of the terrain in both the Transvaal and the Orange Free State, had there been the provision ruling the action of the Intelligence Department, which char-

acterizes the conduct of the corresponding department of the German Empire.

But, beyond this, the conduct of operations on the part of the British authorities has been replete with mistakes which are obvious, even to the lay mind. Military, strategical, and tactical operations have nothing occult in their nature. They are the application of sound common sense to the varying special conditions which present themselves. History of the past has shown cases where civilians, without military experience, but with minds well balanced, quick, receptive, and in fact, having what is called common sense, have been successful as commanders. It does not follow that the similar minds, having had previous military training, and the current of their thought turned in this direction, might not have done better had they been placed in similar circumstances. Nor does it follow that the man of average mind might not, with such a training, have done well and better than he could have done without it.

To review the situation at the outbreak, we have, on the one side, the Boer, armed and equipped, on the ground, practically at home. On the other side, the British had in the colony numerically, an inferior force. Their first action should have been, therefore, to have concentrated all the available forces, withdrawing them from direct touch with the enemy, thus avoiding the chance of conflict and defeat. A considerable portion might, with advantage, have been thrown into Kimberley—sending away all non-combatants, fortifying it strongly, and pouring into the city all available food and ammunition so as to be able to hold it against attack until relieved. This should have been done for the twofold reason of the intrinsic value of Kimberley, and its advantageous position with reference to both Pretoria and Bloemfontein. Here they might have calmly awaited the assault of the Boers. In fact, they should have been only too glad to have receive their attacks, for, in that case, we should have undoubtedly seen results like to those which have been so painfully in

evidence in the attacks of the British on the Boers, except that "the shoe would have been on the other foot."

The nature of the country is such, that operations would have been less difficult than by way of Ladysmith, and the position would have been farther advanced towards the goals which they will have to make ultimately. Instead of this, the forces operating at different points, were obliged to fight an entrenched enemy, superior to them at the point of contact. Defeat followed the erroneous tactics used. It was urged that the retention of the troops in advanced positions was brought about practically by political exigencies. This is advanced as the reason for the obviously erroneous strategical dispositions made; but the war, once being opened, political considerations should have been put in the background, and the only thought should have been in the direction of enhancing the chances of military success, and avoiding as far as possible, the chances of even a slight defeat. It is better to retreat with the road free and clear, than to retreat after defeat. To retire for purposes of manœuvre does not bring with it the loss of prestige that a retreat, due to a defeat in the field, might produce. In weighing the question of political exigencies, it should be borne in mind that these exigencies always yield and conform to the requirements of a victorious army; never to the vanquished. The first and only thought, therefore, should have been the question of making the conditions to secure the ultimate defeat of the enemy, rather than to provide for temporary expediency.

A mistake was made, when reinforcements arrived in South Africa, in subdividing them and operating in portions of the field so widely separated, that they could not assist and support each other. This is only permissible when the forces are sufficiently great in number to be practically stronger than the enemy in *each* of the fields selected for operations. The Boers, with their interior line, superior knowledge of the country, and greater mobility, were superior at the point of contact, and better

able to concentrate upon any one of the separated columns and defeat it, before turning their attention to the others. Whilst no definite knowledge is at hand regarding the movements of the Boers, it will probably be found that the apparent great numbers at all the points with which they came in contact with the British are due to the fact that, having defeated one column, at least a portion of the forces were moved to assist those confronting the other columns. As a large proportion of their forces are mounted and they have the interior lines, they can do this with relative facility, especially as they know the country thoroughly and can select the shortest and most practicable routes.

The British generals, until recently in command, gave evidence by their tactical dispositions and operations, that they had not fully grasped the vast advantage given to the defense by modern improvements in small-bore magazine rifles, using smokeless powder and having a flat trajectory. Whereas, in the past, when the troops were intrenched, the advantages were held to be about three to one for the defense, while at the present day that advantage might be said to be twelve to one. Even where the disparity of forces is greater than indicated by the proportion given, the defense could still hold its own, under circumstances of terrain such as was obtained in the various actions which have taken place. Frontal attacks, under such circumstances, are simply suicidal. No attacks could have been delivered with greater gallantry than were those of the British troops, sent to assault positions difficult to attain in themselves from purely physical obstacles, but impossible to reach under the fire from skilled riflemen such as the Boers are. These attacks were more than magnificent, but they were not "War" of the twentieth century.

A numerous artillery, delivering the ordinary direct fire, did not seriously affect the Boers within their intrenched positions. No accession of ordinary field artillery, however numerous or powerful, would have availed. This was fully exemplified again and

again in the past. The accounts which have reached us of Cronje's forces appear to verify this.

It would appear as if some new means of attack were required to cope with these new conditions. As indicated, the direct fire of artillery will not seriously affect intrenched troops. The Russians found this to their cost at Plevna, where their numerous and powerful field and siege artillery did not affect the Turks behind their earthen intrenchments. As soon as the artillery fire ceased, to enable the infantry to make their assault, the Turks were ready to receive and repel them with both infantry and artillery fire. The query naturally presents itself,—how can this enhanced difficulty be overcome and avoid the slaughter of troops when obliged to make frontal attacks of an intrenched enemy? Where the ends cannot be attained by a flanking movement, and the advance *must* be direct, it seems a natural corollary that the artillery fire must be at high angles, ordinarily called "Vertical" and that it should be of great volume. This would search behind the intrenchments and drive out or destroy the hidden enemy.

To meet the more frequent use of intrenchments which modern battles will present, and to cope with the greater obstacles due to the more intense fire of the defense, it is suggested that a special artillery corps be provided whose guns can deliver so-called vertical fire. As such fire is not as accurate as the direct fire of ordinary field artillery, it is necessary that this special artillery shall be so numerous that the fire would sweep any position which could be intrenched in field operations. Such a weapon is available in a three-inch mortar-howitzer, weighing with its carriage, about a thousand pounds, and which may be drawn by one animal. It could throw a Shrapnel of about fourteen pounds to a range of three miles. The fire from a large number of these would render any position untenable.

It is suggested to the British authorities, that a brigade of four hundred and eighty such pieces, requiring a personnel of

about five thousand men and twenty-two hundred animals, might be sent to South Africa with more tangible results than by sending one hundred thousand men, of infantry, ordinary artillery, or cavalry. Such a brigade of guns could be carried wherever infantry could go. Where the difficulties of the ground are too great for one animal to overcome, the gunners could assist and overcome the difficulties in a way that would not be possible where the gun and carriage are as heavy as the ordinary field and siege gun. They could be placed in a position in a concentrated mass behind hills or woods, so that they might arrange to direct their fire upon any desired point of the enemy's position, without being disturbed by the enemy's fire.

This fire could be accurately directed by observers in gas and hot air balloons. The hot air balloon, with parachute attachment, is particularly commended to attention. It could be carried with all the impedimenta necessary upon one animal. Such a balloon could be floated and made available for observation, within half to three-quarters of an hour's time. The observer could be sustained in the air from ten to fifteen minutes without difficulty, and this would suffice for getting the initial direction of fire. From time to time observers could be sent up momentarily, to continue correcting and directing the fire. The positions taken are likely to be such as to place the observer beyond the reach of rifle fire, and the risks would not be unduly great.

In battle, it is not the number of men who are disabled in the course of a day's fight that tell upon the morale of troops, but it is the losses which may be incurred within a comparatively short time that tend to demoralize and unnerve them. For example, a corps of twenty thousand men may lose in a day's fight ten thousand—one half its number, without being demoralized, but should they lose one fifth of their number—say from three to four thousand men, in the course of half an hour, their morale would surely be destroyed.

Whilst advocating a more mobile artillery, as well as one that

is fitted for vertical fire, one also turns naturally upon the importance of greater mobility of the mass of the troops which are now serving in South Africa, and it seems desirable to add very largely to the mounted force. It is, of course, understood that the difficulties for South Africa are great in this direction, but much more can be gained by such increase of mobility of troops than by sending any large additions of unmobile troops to those already there. The "shock" tactical use of cavalry is no more admissible than the similar use of infantry. It is rather mounted infantry that are required for rapid movement from one part of the theatre of war to another, than the ordinary cavalry, depending for its success by direct assaults.

Frontal attacks are obviously costly, and should only be delivered as a last resort. It follows that manœuvring should be resorted to to a greater extent, and when under fire in the direct presence of the enemy it is important to at once resort to self-intrenchment. In other words, modern warfare, when in direct touch with the enemy, should be carried on by using the mounted infantry for manœuvring, and the unmounted troops for making entrenchments.

The more recent operations under Lord Roberts have given practical demonstrations of the value of mounted troops, and there is no doubt but that the British authorities are now making every effort to secure animals to send to South Africa. The ultimate success gained at Kimberley, Paaderberg, and Ladysmith were largely due to rapid movements of mounted troops.

One of the defects which appear to the distant observer is that in the war up to the present time, reconnaissance and scouting have not been very thoroughly done. This appears to be evidenced by the manner in which the British troops frequently found themselves suddenly in the midst of their enemy, or unexpectedly in direct contact with them. A larger proportion of mounted troops will, undoubtedly, lead to a freer use of these for reconnaissance and outpost work. The necessity for thorough scouting seems to be

so obvious that it is hardly worth while now to discuss it further. In all the points wherein the British operations have been weak, it is reasonable to expect that improvements will take place under the directions of Lord Roberts. The entire trend of events in South Africa shows that it is easier to make mistakes than to rectify them when once made. Nearly all the difficulties that have occurred are due to the initial mistakes, and it has cost thousands of gallant lives to try to redeem them.

The British military operations, especially their battle tactics, have been freely and even virulently criticized by the military experts of other European nations,—especially the Germans. It is not, however, at all assured that they would not have suffered at first, from the indulgence in the same faulty “shock” tactics, by delivering frontal attacks on intrenched troops.

That they still have this tendency, is indicated by their tactics as exemplified in their annual manœuvres, and also very tangibly shown by their retention of the lance for so large a proportion of their cavalry. To continue carrying such an incumbrance as the lance for the very distant contingency of the *mêlée* with broken troops in the open, seems unreasonable. What the mounted troops charging unbroken infantry might expect, may be realized by the consideration of the gallant and determined charge of the French Cuirassiers at Sedan, who were withered and crushed by the fire of a thin line of German infantry armed with a weapon and ammunition very much inferior to those of the present day. It may be well to assume that what was then possible for German infantry, is also possible for infantry of other nationalities.

Whilst under the changed condition of command and troops available, it may reasonably be expected that the British cause will be successful in the near future, some losses and checks are unavoidable. Throughout, it must be borne in mind that, although the Boer forces have lost somewhat less than the British numerically, yet these losses are, for them, very much more serious, in that they are practically irreplaceable, and their original

number was small. Beyond this, each individual of the Boer force is likely to be widely known to a large proportion of the community.

There seems to be two things desirable to insure an early closing of the war. A long line of communication, such as Lord Roberts has to Kimberley, would require a very large force to protect it from the forays of an enemy like the Boers. It would, therefore, appear desirable to rush into Kimberley a large amount of food, ammunition, etc., sending out all non-combatants, and fortifying it strongly. It could then serve as the secondary base of supplies for the armies operating against Bloemfontein and Pretoria. Mafeking might also be utilized in this way. By so doing it would very much simplify the work of the British commander and his forces.

The following was published in the *Cape Argus*, February 1st, as the advice of a Basuto chief: "I am grieved to hear of the brave Englishmen losing so many lives unnecessarily. I am only a native, but I know the Boers. You are able to consult the heads of departments, who may pass on what I say. I wish I were dead; then I would fly to the English chiefs and urge my plans.

"The Boers are intrenched in schanzes (breastworks) behind loopholes. Let them starve there. Let General Gatacre watch them at Stormberg; then march another army towards Bloemfontein. The Boers will say: 'What now? Are the English getting behind us or marching on Bloemfontein'? They will leave to defend their homes. Then General Gatacre will be free to march on and join the others.

"The Boers in Natal will begin to shake their one-day camps. The Boers have their wives and children and sheep, and will go to their support.

"Why do the English drive straight against Boer fastnesses? A wildcat in a hole tears bulldogs' noses. Watch the hole and get in behind.

"I feel burning in heat of mind. The warriors desire to see the Boers smashed. They treat the natives badly. We have peace and equal justice under the English."

"I wish I could see the English chief and urge what is in my heart."

The advice is excellent, and points out what has since been practically followed by the British. One cannot but suspect that the real author was either a Colonial or a British officer, who, having a proper realization of the situation and its needs, gave his views in the only way open to him, anonymously. But however given it is good military sense.

As the situation now presents itself, the Boers have only two courses open to them, neither of which are likely to do more than prolong the war and increase their own suffering and losses.

One of these is to attack and break the British lines of communication at numerous points. The long railroad line is especially vulnerable to raiding parties. The other is to concentrate their forces some distance south of Pretoria, and put up a stiff rear-guard fight until reaching Pretoria. Here they can make their last fight until starved out. On the part of the British, it is to be hoped that they will make their advances by rapid flank movements of their mounted troops.

When they have finally reached Pretoria, it is hoped they will be content to beleaguer it and patiently await the time when food and ammunition supplies have become exhausted. The inevitable will then be reached with a minimum of losses.

Inasmuch as in modern warfare ammunition is used up with astounding rapidity, it is an unavoidable conclusion that the Boers can only keep up the war by securing supplies from the outside world. These must chiefly reach them through Delagoa Bay. It would, therefore, appear advisable for Great Britain to mobilize her naval forces as a precautionary measure. By her taking temporary possession of Delagoa Bay, with all due apologies and regrets, she would cut off ammunition and food from the

Boers, which are the real sinews of war, and thus bring the war to an early close. The war being ended, the *statu quo* could be restored. However much the other powers might snarl and object, it is doubtful whether they would go to the extremes of war, to prevent Great Britain from assuming this temporary possession of the Bay. The maritime commercial interests of Germany and France are too great to be placed in hazard by any considerations in this remote and unimportant direction.

Those who have had experiences of war can realize how difficult it is to see the situation entirely, clearly, and correctly at a distance. It is much easier to criticise and find fault than to originate and do. What has been said heretofore is, therefore, given with the remark that it is based on the information which has been promulgated through the public press, and not contradicted officially or otherwise.



THE NEUTRALIZATION OF THE NICARAGUA CANAL

JOHN R. PROCTER, *Washington.*



THE Monroe Doctrine, which practically amounted to a declaration of the commercial neutralization of Central and South America; the Clayton-Bulwer treaty, with the Hay-Pauncefote amendments for the neutralization of a great ship highway connecting the Atlantic and Pacific oceans; and the recent agreements for the preservation of the "open door" policy in China, or, in other words, for the commercial neutralization of that vast and populous empire,—are three great landmarks in the higher and more intelligent aspirations of our people for commercial freedom as opposed to a policy of isolation and commercial restriction.

One of the arraignments of the king in our Declaration of Independence was, "For cutting off our trade with all parts of the world." The war of 1812 was fought to enforce the doctrine of freedom of the high seas, and the rallying cry was, "Free trade and sailors' rights"! A few years later (1817) an agreement was entered into, at the instance of the United States, between this country and Great Britain, to neutralize the Great Lakes by limiting the armed ships to be maintained by the two countries on those waters to a few small vessels for mere police duty.

In 1823, at the instance of Great Britain, this country pro-

claimed the celebrated Monroe Doctrine, which, by putting a veto upon the contemplated reconquering of the revolted colonies of Spain with the aid of the Holy Alliance, simply guaranteed the freedom of the markets to all countries on equal terms, by preventing European powers from acquiring territory in this hemisphere and turning such acquisitions into closed preserves for their exclusive benefit.

A few years later (1826) Henry Clay, who more than any other man had forced the war of 1812, writing, as Secretary of State, his instructions to our delegates to the Panama Congress, said: "After these two great maritime powers (Great Britain and the United States) had let Continental Europe know that they would not see with indifference any forcible interposition in behalf of Old Spain, it was evident that no such interposition would, or, with any prospect of success, could be offered." In these same instructions Mr. Clay wrote: "If a canal across the Isthmus be opened so as to admit of Sea-Vessels from Ocean to Ocean, the benefits of it ought not to be exclusively appropriated to any one Nation; but should be extended to all parts of the Globe."

A few years later (March 3, 1835) the Senate, in requesting President Jackson to open negotiations with Central American governments for treaties looking to the construction of a Ship-Canal across the Isthmus, passed a resolution by a *unanimous* vote containing a provision for "securing *forever*, by such stipulations, the free and equal rights of navigating such canal to all nations." In 1839 the House of Representatives passed a resolution by a unanimous vote containing the language above quoted from the Senate resolution of 1835. On December 12, 1846, the United States concluded a treaty with New Grenada (now Colombia) by which the United States, "Guarantee, positively and efficaciously, the perfect neutrality of the before mentioned Isthmus, with the view that the free transit from the one to the other sea may not be interrupted or embarrassed in any future time while this treaty exists." This treaty is yet in force.

A few years later President Polk, in referring to this treaty, referred also to the resolutions of 1835, quoted above, and said that he had no doubt like guarantees would be given by Great Britain and France, and added: "There does not appear to be any other effectual means of securing to all nations the advantages of this important passage but the guarantee of great commercial powers that the Isthmus shall be neutral territory. The interests of the world at stake are so important that the security of this passage between the two oceans cannot be suffered to depend upon the wars and revolutions which may arise among different nations." President Taylor, in his message to Congress (December 4, 1849), said of a proposed canal: "Should such a work be constructed under the common protection of all nations, for equal benefits to all, it would be neither just nor expedient that any great maritime state should command the communications. * * * No such power should occupy a position that would enable it hereafter to exercise so controlling an influence over the commerce of the world, or to obstruct a highway which ought to be dedicated to the common use of mankind." The Clayton-Bulwer treaty of 1850, providing for the neutralization of any canal or railway which might be constructed uniting the two oceans, seems but a legitimate conclusion of the hitherto uniform policy of this government as outlined above.

Great Britain had assumed a protectorate over a tribe of Indians occupying the Mosquito Coast, and had claimed for these Indians all the coast from the mouth of the San Juan River northward for five hundred miles, including the harbor since called Greytown, and had (June, 1848) asserted this claim by taking possession of the harbor, and sending an expedition up the San Juan River, and capturing, after a sharp engagement, Castillo, on that river. This gave to Great Britain the virtual control of the proposed ship-canal via the San Juan River and the Lake Nicaragua.

On November 8, 1849, our Minister, Mr. Lawrence, informed Lord Palmerston that he had been instructed by the

President to inquire whether the British Government intended to occupy or colonize Costa Rica, the Mosquito Coast, or any part of Central America¹, and also, "Whether the British Government will unite with the United States in guaranteeing the neutrality of a ship-canal, railway or other communication to be opened to the world and common to all nations." Lord Palmerston answered (November 13) that Great Britain did not intend to colonize any of the above named territory; he referred to the "close political connection" existing for about two centuries between the Crown and the "Territory of Mosquito," over which Great Britain did not claim "dominion"; as to a canal, he expressed great pleasure in coöperating "upon the condition, moreover, that such communication should at all times be open and accessible for the commerce of all nations upon equal terms for all."

The negotiations thus commenced at the instance of this government led to the conclusion of the celebrated Clayton-Bulwer treaty, signed April 19, 1850, and ratified by the Senate July 4, 1850, by a vote of forty-four to eleven.

This treaty provided for a canal to be open on like terms to all, free from military control, from fortifications and blockade. Article VIII stipulated: "The Governments of the United States and Great Britain having not only desired, in entering into this convention, to accomplish a particular object, but also to establish a general principle, they hereby agree to extend their protection, by treaty stipulations, to any other practicable route."

A concession had been granted by Nicaragua (August 27, 1849) to the Atlantic and Pacific Ship-Canal Company, composed of Cornelius Vanderbilt and other American citizens, and a survey of a route was made by Col. B. W. Childs, who had been Chief Engineer of the New York Canals. Mr. Lawrence wrote

(1) The term "Central America," where used, refers to the federation formed in 1847, consisting of Honduras, San Salvador, and Nicaragua.

to Secretary of State Webster (February 27, 1852): "The report of Col. Childs is looked for with great interest, and there does not appear to be any difficulty in associating persons of both countries able to accomplish so great a work whenever a satisfactory survey shall have been completed." Col. Childs' report and surveys were submitted by the President to a board of United States engineers, and by the British Government to a board of English engineers appointed by Lord Malmesbury. Both boards reported favorably, and Mr. Lawrence informed Mr. Webster (August 13, 1852), that "British capitalists would now have the matter under consideration."

The election of November, 1852, brought the party opposed to the Taylor and Fillmore administrations into power. The British Government had (June 17, 1852) announced "the Islands of Ronatan, Bonacca, Brabant, Helma, and Morant, to be a colony, to be known and designated as the Colony of the Bay Islands." This brought forth in the United States Senate a resolution introduced by General Cass asking: "What measures, if any, have been taken by the Executive to prevent the violation of Article I of the treaty of July 4, 1850"? In answer to this the President sent a "Declaration" made by Mr. Clayton and Mr. Bulwer as to their understanding of that part of the treaty, to the effect that it was not understood by either of them that the treaty included the British settlement of Honduras or the Bay Islands¹. Secretary of State Marcy, writing to our minister in Central America (December, 1853), said: "This country considers it a subsisting contract, and feels bound to observe its stipulations, so far as by fair construction they impose obligations upon it. * * * It believes that Great Britain has

(1) The full discussion over this "Declaration" and the treaty, can be found in a communication from Mr. Clayton to the *National Intelligencer*, January 8, 1853; speech of General Cass in Senate, January 6, 1853; speech of Mr. Seward, same session; and speech of Mr. Clayton in Senate, March 4, 1853.

a qualified right over a tract of country called the Belize¹, from which she is not ousted by this treaty."

The correspondence between Mr. Buchanan, our minister to England, and Earl Clarendon over the construction of the treaty, was continued by General Cass when he became Secretary of State under President Buchanan. Earl Clarendon proposed that, as the differences of the two countries turned solely on the construction of the treaty, the case be submitted to the arbitration of a neutral power. Later, Earl Malmesbury, who succeeded Clarendon, proposed a mutual abrogation of the treaty, provided both countries would "return to the *status quo ante* its conclusion in 1850."

General Cass, writing to Lord Napier (April 6, 1858) said: "If, therefore, the President does not hasten now the alternative of repealing the treaty of 1850, it is because he does not wish prematurely to anticipate the failure of Sir William Ousey's mission." This mission resulted in a treaty with Honduras, November 28, 1859, and with Nicaragua (August 28, 1860) relinquishing the Mosquito protectorate, and recognizing the Bay Islands as part of Honduras.

As a result of these treaties, President Buchanan in a message to Congress (December 3, 1860) said: "The discordant construction of the Clayton-Bulwer treaty between the two governments, which, at different periods of discussion, bore a threatening aspect, has resulted in a final settlement entirely satisfactory to this government."

Thus closes the first chapter of this treaty. It was not possible to obtain money for the construction of the ship-canal while the two governments most interested were quarreling over the construction of the treaty under which the work was to proceed. The Walker filibustering expedition into Nicaragua

(1) "The Belize," or what is now British Honduras, formed part of the Yucatan province of Mexico, and never was part of Honduras, and was not included in the terms of the treaty of 1850.

added additional complications, and probably was one of the causes influencing that country to revoke the concessions of 1849 to the American and Pacific Canal Company.

Following on the conclusion of the contention over the construction of the treaty, which resulted in a "final settlement," came the great Civil War.

The French, having obtained concessions from Colombia, began the construction of the Panama Canal. President Hayes in a message to the Senate (March 9, 1880) advocated the policy of a canal under American control. Mr. Blaine, as Secretary of State, advocated the revision of the treaty of 1850. Writing to Mr. Lowell (November 19, 1881), he said:—

"The following is a summary of the changes necessary to meet the views of this government:—

"First. Every part of the treaty which forbids the United States fortifying the canal and holding the political control in conjunction with the country in which it is located, to be canceled.

"Second. Every part of the treaty in which Great Britain and the United States agree to make no acquisitions of territory in Central America, to remain in full force."

Earl Granville in answering Mr. Blaine said: "The principles upon which the whole argument of the dispatch is founded are, so far as I am aware, novel in international law." He calls attention to the fact that when England proposed to abrogate the treaty and return to the *status quo ante* its conclusion in 1850, such an alternative was deprecated by General Cass in 1858, and he added: "But subsequent events make it unnecessary to dwell further upon this part of the discussion, for the question was settled by the practical accomplishment of that which the United States Government regarded as the most satisfactory conclusion."

Mr. Blaine in the correspondence justified General Cass' unwillingness to agree to a mutual abrogation of the treaty of

1850, because Great Britain might "by the force of her power" obtain advantages in Central America which the Clayton-Bulwer treaty prevented. Now, it can well be seen that this country was better able to cope with England on the seas in 1858-9 than in 1881. The fleets of the two countries were more nearly equal, and we had more ships that could be converted into cruisers, and ships of war, before the revolution in naval architecture. Coaling stations were not then absolutely necessary. Great Britain had, in 1881, a powerful fleet of armored ships, and this country had not begun to build such ships, and there was not then an establishment in the country where steel armor plates could be manufactured.

Mr. Frelinghuysen took up the controversy, and in a communication to Mr. Lowell (May 8, 1882) said: "The Clayton-Bulwer treaty was concluded to secure a thing which did not exist, and which now never can exist. It was to secure the construction of a canal under the grant of 1849 from Nicaragua." And again: "The canal (Nicaraguan) never having been built, the reason for the surrender of the privilege has ceased, and the treaty with Great Britain is voidable, being without consideration or any object to which it is applicable."

This ignores Article VIII of the treaty. And the statement will certainly be questioned, that there was no consideration, in view of the cession of the Bay Islands, which Mr. Buchanan and Mr. Cass styled the key to the Gulf of Honduras, the harbor of Greytown, and the mouth of the San Juan River,—all accomplished by the Clayton-Bulwer treaty of 1850, and the construction forced upon Article I of that treaty by the administration of Mr. Buchanan. President Taylor, in submitting the treaty to the Senate (April 22, 1850), said: "At the time negotiations were opened with Nicaragua for the construction of a canal through her territory, I found Great Britain in possession of nearly one half of Central America as the ally and protector of the Mosquito king. It has been my object in negotiating this treaty not only to secure

the passage across the Isthmus to the government and citizens of the United States, by the construction of a great highway dedicated to the use of all nations on equal terms, but to maintain the independence and sovereignty of all the Central American Republics. The Senate will judge how far these objects have been effected."

The Senate, having a majority politically opposed to the administration, ratified the treaty by a vote of forty-four to eleven.

Secretary Fish, writing to General Schenck (April 26, 1872) of British claims in Central America, says: "The Clayton-Bulwer treaty effectually checked this pretension."

In 1884 a treaty was concluded between the representatives of the United States and Nicaragua known as the Frelinghuysen-Zavala treaty, which gave to the United States the right to build and control a canal, and which would have been a practical abrogation of the treaty of 1850, on the part of this country.

This treaty was withdrawn from the Senate in 1885, and was never re-submitted for ratification. President Cleveland in withdrawing this treaty said: "Whatever highway may be constructed across the barrier dividing the two greatest maritime areas of the world must be for the world's benefit, a trust for mankind, to be removed from the chance of domination by any single power, nor become the point of invitation for hostilities, as a prize for warlike ambition. * * * And again these suggestions may serve to emphasize what I have already said as to the score of necessity of a neutralization of any interoceanic transit; and this can only be accomplished by making the uses of the route open to all nations, and subject to the ambitions and warlike necessities of none."

The above is much in line with Secretary Seward's instructions to our minister to Nicaragua. He wrote (June 5, 1861): "Favor in every way you can the improvement of the transit route, seeking only such facilities for our commerce as Nicaragua

can afford profitably to herself, and yield at the same time to other commercial nations."

The binding nature and obligations under the treaty of 1850, have been recognized by Secretaries Webster, Everett, Marcy, Cass, Seward, Fish, Evarts, Bayard, Blaine, Olney, and Hay. This country has persistently held Great Britain to a rigid adherence to all the provisions, and it is questionable whether we have not forced conditions not contemplated by the original treaty. There has been a growing demand for a canal under American control, and a belief that owing to the disturbed condition of Central America and the frequency of revolutions, the large expenditure of money necessary to complete a canal would call for the policing or safeguarding of the canal by some strong power.

This is provided for by the Hay-Pauncefote treaty, signed in Washington City on February 5, of this year, and now before the Senate for ratification. This treaty is "to remove any objection which may arise out of the convention of April 19, 1850, to the construction of such a canal under the auspices of the Government of the United States without impairing the 'general principle' of neutralization established in Article VIII of that convention." This treaty gives to the United States the right to build, own, and operate the canal. The canal is to be open to all in times of peace and war on equal terms, to be exempt from blockade, and from all acts of hostility. "No fortifications shall be erected commanding the canal or the waters adjacent. The United States, however, shall be at liberty to maintain such military police along the canal as may be necessary to protect it against lawlessness and disorder." /

II.

The treaties of 1850 and 1900 are based on the same policy of neutralization of commercial highways and commercial privileges for which we are now contending in China. We cannot

expect to obtain an "open door" in China while claiming or exercising the right of adopting the policy of a closed door for the great commercial highway connecting the two oceans.

This country, having a superabundance of natural resources, with the largest aggregation of machinery of highest efficiency in the world, and a population unsurpassed for vigor, adaptability, and efficiency, has more to gain from unrestricted and untrammelled commerce than any other country. As our capacity for production in agriculture and manufacture is steadily increasing, and more and more exceeding our capacity for consumption, unrestricted commerce is fast becoming a vital necessity to our continued prosperity.

The bulk of our exports, or over seventy-six per cent, go to Europe, and we are increasing of late years our exports to all parts of the world. So keenly is competition from this country being felt that we are beginning to hear propositions for the formation of a Continental European Zollverein to guard against American competition. The continuation of our present tariff policy, and the avowed determination of this country to construct the proposed canal, and to fortify the same, with the right to charge discriminating rates, or to close it against whom we please, will strengthen the already increasing number of the advocates of the proposed European Zollverein. Great Britain would not object to this country owning and fortifying the canal, should we enter into a treaty to guarantee the neutralization of the same; but the objection to fortifying would doubtless come from the Continental Powers. A proposition to own and fortify without assuring neutralization would be opposed by all the maritime powers in the world, including Great Britain. It must also be noted that existing treaties of Nicaragua with European countries would prevent that country from granting a right for construction and ownership of the canal to any country that did not guarantee neutralization.

More than half of our exports go to Great Britain and her

colonies, and as the British possessions in the temperate zone,—Australia, Canada, and South Africa,—offer, next to this country, the most inviting fields for colonization and industrial development, the gain in population and wealth must continue at an increasing ratio. These peoples represent the world's greatest traders. Australasia trades abroad to the value of eighty-one dollars and ninety-seven cents per capita each year, not counting the trade between the Australian colonies; Cape Colony to the value of eighty-four dollars and thirteen cents; Canada, including British North America, sixty dollars and seventy-seven cents per capita. Great Britain's trade with her colonies in the temperate zone amounts to thirty-five dollars and fifty cents per capita of the total population of those colonies, while her trade with her tropical colonies amounts to but one dollar and thirty-seven cents per capita. She exports to her non-tropical colonies to the value of twelve dollars and thirty-two cents per capita, and to her tropical colonies to the value of seventy-one cents. An increase of thirty persons to the population of her tropical colonies is less profitable to Great Britain than the increase of one person to the population of Australia and Canada. These colonies are increasing so rapidly in population and wealth that the Greater Britain will ere long be in the Far East. Australasia, with a population of less than four millions, has a foreign trade exceeding that of all the Russias, with a population of one hundred and thirty millions. Melbourne, now one of the great cities of the world, did not exist when the present queen of England ascended the throne.

In view of these facts, any policy on the part of this country that would hasten the adoption of a commercial union between Great Britain and her colonies would be unwise. Our exports into Australasia and South Africa have largely increased in the past few years. Canada, with less than one sixth the population of South America, buys from us more than twice as much every year as do all the South Americans. Our trade with South America shows little or no gain in the past few years, while it increases rapidly with the rest of the world. We have already, by our recent tariff policy, forced Canada to give a preferential of twenty-five per cent on customs duties in favor of countries admitting Canadian products free, which is for the benefit of the mother country, and, as a result, Canadian trade with Great Britain

has increased tremendously in the past two years. This is the first step towards a British Imperial Customs Union.

The result of the war in South Africa will be a British South African Federation, including all that vast empire south of the Zambezi. There will then be three great colonial federations; Canada, Australasia, and South Africa. In this war, for the first time the Colonials have fought side by side with each other and with the Imperial troops under the Imperial flag, and it will give a tremendous impetus in hastening Imperial federation. The British Empire now has a population of four hundred millions, with a capacity of almost unlimited increase in the sparsely settled regions of her colonies in the temperate zone. Add the population of the Yangtse Valley of China, now under the British "sphere of influence," and we have an aggregate of near one half the total population of the globe, that could be included in the Customs Union of the British Empire.

Should this country, by continuing in its policy of commercial restriction, force such a combination; then with a Continental Zollverein, which would also include European colonial possessions and "spheres of influence," we should have open to us on equal terms only the meagre markets of South and Central America. Of our total exports we send less than three per cent to those countries, and while our exports are increasing at a rapid rate elsewhere, they show no perceptible increase to South America. It is evident that we have everything to gain by a policy of unrestricted commerce and everything to lose by an opposite policy.

III.

It will be to the advantage of this country, if the canal be kept free from hostile operations, and free from blockade in times when we might be engaged in war with a foreign power, so that our ships can have free access. The treaty guarantees this, and, backed by the moral forces and international law, it will be more potent in protecting and keeping open the canal than fortifications can possibly be, especially as under the proposed treaty this country may maintain such *military police* along the canal as may be necessary, and the strongest naval power in the world stands pledged by the treaty to aid in preventing any blockade of the

canal. Under the laws of war unfortified places are exempt from bombardment. Fortifications invite bombardment, and consequently those designed to defend our coast cities are placed as far from those cities as the nature of the ground will admit. The proposed La Flor dam on the Pacific end of the canal, designed to flood the Tola basin will be about two thousand feet long, and seventy feet high above the surface of the coast plain, and only three miles from the seven-fathom line of the open sea. A better target could not be desired, and no amount of fortifications could prevent ships coming within range, and a few well directed shells containing high explosives would put the canal out of commission. Some of the locks on the Atlantic end of the canal will also be well within range from the open sea. If we are not strong enough to defend the canal with our fleets and prevent blockade, it will be useless to us in times of war, unless neutralized by treaty stipulations. If we are strong enough to defend it from the sea with our ships, and prevent blockade, we shall need no fortifications.

In defending the canal, we should be at a great disadvantage, unless we had command of the seas, for it would require much more time to march an army overland through the tropical country from the terminus of the railway in Mexico,—even supposing we were granted the right to send troops through Mexico and the Central American states, and our troops met with no opposition en route,—than would be required to transport troops by sea from India, China, Japan, Australia, South Africa, or from any port in Europe.

The neutralization of the Suez Canal was of such vital importance that a treaty was concluded at Constantinople (October 29, 1889) between Great Britain, Germany, Austria-Hungary, France, Spain, Italy, The Netherlands, Russia, and Turkey. One article of that treaty stipulates:—

“The Suez Maritime Ship-Canal shall always be free and open, in times of war, as in times of peace, to every vessel of commerce or war, without distinction of flag. Consequently, the high contracting parties agree not in any way to interfere with the free use of the canal, in times of war as in times of peace. The canal shall never be subjected to the exercise of the rights of blockade.”

The great powers of Europe will have a greater interest in the

neutrality of the canal through the Isthmus than in the neutrality of the Suez Canal, for the following reasons :—

The immense sea-borne commerce of Great Britain and her colonies amounts to more than half of the sea-borne commerce of the world, and a combination of European powers may at some time cut her off from communication with her vast Eastern possessions by way of the Mediterranean and the Red Sea. Her West Indian possessions, mainly acquired before the landing of the colonists at Jamestown or Plymouth, are near this canal ; and these, with her growing possessions in the North Pacific, in Australasia, and the Far East, have a vital interest in the neutralization of the canal.

France aspires to become again a great colonial power, and her recently acquired possessions in Cochin China, the Siam Peninsula, and Madagascar, give her a direct interest in this proposed sea route.

Russia is fast becoming more of an Asian than a European power. With the completion of her great Siberian military highway, her interests in the Far East become a controlling influence. This Isthmian Canal will afford to her, in times of war, the most direct and the safest communication between her Baltic ports and Vladivostock and Port Arthur.

Germany aspires to be a colonial power, and is building a powerful navy. She has recently acquired large interests on the coast of China, and in the south sea, and more recently the numerous islands of the Ladrões and Carolines, and she is extending her trade in South America. Thus, this great power becomes directly interested in the neutralization of any ship-canal connecting the two oceans.

The Netherlands have the vast and populous possessions of Java, Sumatra, and Borneo, so that their interests will be joined with those of the other countries. Then, Mexico and the republics of Central and South America have most important interests to be safeguarded by neutralization.

Should this country reverse its traditional policy of neutralization, and proceed to build and fortify the canal, this would force the great naval and commercial powers to complete the Panama Canal. Then in case of a war with a power stronger at sea either on the Atlantic or Pacific, than this country, we should

have our own canal closed to our ships, and the Panama Canal open to the ships of our enemy.

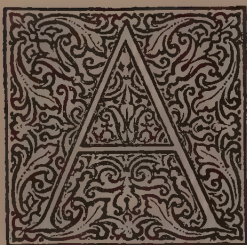
We have now a coast line to defend of two thousand and forty-three miles on the Atlantic; one thousand eight hundred and fifty-three miles on the Gulf of Mexico, and one thousand eight hundred and ten miles on the Pacific, or a total of five thousand seven hundred and five miles, not counting Alaska or our recently acquired possessions. With the indentations to the head of tide water, our Atlantic and Gulf coast line amounts to fifty-nine thousand nine hundred miles. It would seem wise to provide, for a time at least, that so important a work as the canal, remote from our own coasts, should be protected by the stipulations of international agreement. Our naval stations at San Francisco, Hawaii, and Samoa, are nearer than are any of the naval stations of the maritime powers on the Pacific, and our fleets on the Atlantic side will have advantages of location over the fleets of any European power. It is only one thousand two hundred miles from Newport News to our naval station at San Juan, while it is four thousand two hundred miles from Portsmouth, England, to Kingston.

If we are in earnest and really desire the construction of this important highway of commerce, there seem to be but two consistent courses open to us: (1.) Ratify the treaty, which, while guaranteeing the neutralization of the canal, gives to this country ample powers to protect the same; obtain from Nicaragua such concessions as she can grant, consistently with her existing treaties with other powers, and construct, own, and police the canal; holding the same as a trust for civilization; or (2.) Throw down the gauntlet, and decide to run amuck against civilization; extend our coast line by annexation of Mexico and all Central America; build a railway to Lake Nicaragua, and fortresses and war ships necessary to defend the canal against the world.

In conclusion, I ask again the questions asked in 1893 in concluding an article entitled "America's Battle for Commercial Supremacy": "Are not wars mainly the outgrowth of trade restrictions, and laws based on national selfishness? And will not unrestricted commercial rivalry between nations prove the most potent promoter of international comity and peace, and the greatest blessing to mankind?"

FINE ART AS DECORATION

RUSSELL STURGIS, *New York.*



PADDLE from some island of the South Sea lies on the table, and two others, with deadly weapons from the same region—"battle clubs from the Isles of palm"—are at hand for comparison with it. The paddles certainly are meant for service, however much they may be reserved for service on

special occasions. Each of these has a blade ten inches wide and seventeen inches long at the least, the blade of one being considerably larger than this. One side of the larger blade has, in the adornment of its surface, a band two inches wide drawn straight through the middle in continuation of the line of the handle; a band of the same width follows the curved outline, and smaller bands are drawn concentric with this one, all stopping against the straight band through the middle which controls and binds everything together. The opposite side has the same central band lengthwise of the blade and a similar though narrower boundary band, but the remainder of the blade is filled up with bands running parallel with the straight one in the middle. The smaller blade has one side very similar to that just described, with minor changes only. The other face of this paddle has indeed the central band running through and stopping the curved outer boundary, but all the remaining flat surface,

which is of considerable size, is covered with a sowing or sprinkle of circular figurations surrounded by little points which do not radiate strictly, but chase one another around the circumference of the little circle. Every part of these surfaces is occupied by little sinkings, sometimes triangular, sometimes in the form of circular beads, sometimes in scrolls or lozenges which are divided in the middle by a sharp ridge into two triangles. Nowhere is there a piece of wood as large as a common friction match left unsculptured, with one single exception, viz., on one half of the face of the paddle decorated with circles, these circles do not quite touch, but on the other side of the same face, or surface, they crowd one another. The handles are covered throughout their whole length by similar patterns in sunken cuts, clean cuts and sharp, but of the most rigidly simple character—triangles, crescents, lozenges. At one point alone is there the slightest suggestion of—the slightest possible allusion to—any natural form. A ring of grotesque projections, which are to the trained eye obviously reminiscences of the human face, surrounds the head or top of the handle and furnishes it with a most effective crown. The war clubs, as seems to be usual, are carved in a bolder style, with larger parts, their lobes and gadroons being measurable by inches, while the patterns on the paddles are minute, few of the units of design measuring a quarter of an inch in greatest dimension.

There has been mention above of triangles, crescents, almond-shaped hollows; sinkings and notches; gadroons and bosses; but all these are the familiar ways of speaking of and describing those things which are really elements of light and shade. When there is sun there is also shadow, and of the contrast of shadow with light comes sparkle. Whatever the brown man of the isles may have thought of as he scooped and notched his patterns, the result was always the same—a system, more or less elaborate, of light and shade, made possible by these sinkings and bossings. Every sunken cut has a light side and a dark side, and the light

side will, nearly always, be brighter than what remains smooth of the original surface.

As for the crude and very conventional representations of the human face, recent scientific studies founded upon careful investigation have tended toward a too bold assertion of the derivation of all these decorative patterns from earlier and more faithful copying of natural forms. The difficulty with these studies has been that they have been conducted by men familiar with scientific processes but ignorant of the ways of the designer. To one whose knowledge of decorative design is deeper than mere ability to assign it to a certain style which he is copying carefully out of books, it is as obvious and certain as anything can be that the South Sea islander has used his long sunny hours of what would otherwise have been idleness to dig out these little triangles one by one with a shark's tooth set in a handle, or a splinter of hard stone, and has done it to make his paddle as fine as his neighbor's, and even one degree finer. Ruskin showed long ago how the solid wooden rim at the gunwale of a Venetian *piatta* was decorated by having a notch taken out of it, first on the upper edge, then one below, and so on for the whole length of the vessel's side. Some of these notches are cut V-shape, some are rounded so that the cut when looked at by itself is almond-shape; it is from these that a whole series of marble mouldings which adorn the palace-fronts of Venice, have originated, the same process of notching being carried into greater complication as the hard material and the deliberate attempt at richer designing offered a sufficient inducement. Men of the North as well as men of the South, when time was not very precious to them and when their lives were simple and contained but few personal ambitions, could adorn their objects of utility of wood and of stone, and even of bronze and of steel, in similar obvious and easy ways. The results, however quaint and fantastic they sometimes are, were reached by obvious methods. The interlacing bands of the Celtic manuscripts and the similar

adornments of wooden churches and stone crosses in the North are the obvious result of the interest which the carver took in the plaited and woven patterns made with rushes, with flax, with withes, or with osiers. Another lot of patterns came of dividing a surface, as of smooth beaten ground or of a smoothly cleft stone, into squares like a chess-board, and putting a circle or a lozenge into the middle of each square, or giving to each square a special arrangement of hatchings or dots. Whether the primary use of this form came from the copying of an actual surface so adorned, much as if the modern designer were to copy the hopscotch table drawn with chalk by children,—whether the early designer merely imagined such a division into squares and such a filling of each square, and drew what he saw in his mind,—is of little importance, the point being that when a simple creature, trying to beautify his surroundings, has a surface which he wishes to break up and diversify, he speedily adopts this and other similar obvious devices for that purpose. Nor are such simple schemes of decoration altogether foreign to our modern experience, even in Europe. We cannot, indeed, combine stripes and squares beautifully, nowadays; the art seems to be gone. When we wish a pretty piece of cotton cloth woven in stripes we have to import it from India, whence it comes under the name of *dhurrie*; when we wish a piece of cloth which has been printed in effective patterns, we must get it from Java, whence come the oddest combinations of form, ugly until we hang the piece of stuff up at four feet distance and judge of its general effect; when we wish for either of these characteristic methods of design more richly carried out and elaborated by some flower-like details, we go to Persia for it, or find it in a very few forgotten corners of Europe, where ancient Indian, or at least over-sea traditions still linger—as in Portugal and two or three little towns on the Riviera. Europe cannot now design in this abstract way; but Europe keeps on trying to design, and about the prettiest things which it produces are the simplest; nor is anyone likely to be displeased

with the patterns of ordinary diaper in white on white, as in certain stuffs which we buy for towels. The reader should linger over the cases of linen at the coming Paris Exhibition, rejecting the more elaborate patterns which in nine cases out of ten will be hideous, and taking the simplest ones. He will see there a process of decorative design absolutely instinctive, and absolutely free from any attempt at recording facts, or imitating, or even representing nature.

If, however, the primitive artist is capable of making designs without reference to any natural object which attracts his eye and induces him to imitate its forms, it is equally true that the desire to imitate natural forms is always with him. At the same time that he is printing tappa cloth with wood blocks or weaving baskets, and using absolutely unmeaning patterns for such simple surface decorations as that, he is trying to record what his eyes behold in Nature. His religion of dreams and fears sets him to shape knots and roots into the rude form of humanity, of such disguised and denatured humanity as best suits his ideas of the image which is to stand for his encouragement and his enemy's terror—the fetish or idol or totem. But more than this, he is led, not as the ignorant worshiper or the savage enemy, but as the artistic thinker and the composer of designs, into a more sympathetic study of nature. No one can doubt the fact that the man who has begun to desire something beyond zigzags and notches turns immediately to imitation of natural objects for the expression of his meaning. This can be seen in the South and in the North; among the tropical Asiatics and the almost polar Scandinavian warriors. It is perfectly well seen in that marvel of artistic knowledge and shrewd adaptation of means to ends, the early art of Egypt. Although we have received truly archaic art from that great ancient world—although the earliest Egyptian art which we know is already a style, perfected in a sense and full of significance—yet the unexampled antiquity of it gives it special interest to us in this inquiry.

From the very earliest times, even from the early empire, from the fourth dynasty, from the thirty-sixth or the fortieth century B. C., significant figures are used in immediate connection with spirals, zigzags, lozenges, diaper patterns of many sorts, and sprinkles of infinite variety. The patterns of these remote days are neither more nor less elaborate than those of the time of the great Rameses, only ten centuries before Phidias' own day. The art is of extraordinary decorative value, the combinations of spirals are not matched elsewhere, but are simply copied in early Greek work, the painted lines and bands of the Egyptian surfaces being faithfully reproduced but in sculptured marble, the change being made in a way which would seem to argue a difference in the spirit of the two populations. Sometimes the scroll work is alternated with effects of radiation, effects of parallelism, effects of alternate larger and smaller spaces surrounded and enclosed by the scrolls, effects of contrast between sharp, pointed, and softly rounded boundaries. Sometimes into a pattern which seems absolutely underived and the unconscious and merely natural thing to come from the free play of the draftsman's wrist, are interpolated obvious and not unskillful copies of natural form. Side by side on the same wall, patterns of the lotus, patterns of the papyrus, patterns of hawk head and human head, contrast with unmodified checkers and stripes. Plant form, animal form, spiral, zigzag, and square,—all are treated with precisely the same respect; and all are invested with equivalent force and glow of color.

It has been said that Egypt gives the best opportunity to study these changes; but in every system of early art which is known to us there exists a similar though less abundant field for study. It is only in cases where certain limitations are put upon the designer, as by the unintelligent and oppressive religion of Islam, that an exceptional and wholly independent system of design can be said to exist,—one which is always inferior. If we wish to compare the work of a more modern people with the work of the Egyptians, the Japanese give us by far the best opportunity for

the comparison, because in the Japanese art as we have now learned to regard it with abundant examples from which to judge from, a purely developing,—a simple self-organizing style has existed for five or six centuries up to the present epoch when it is in the process of being destroyed by the demands of European commerce. Even as the civilization of Egypt was isolated for three thousand years by the very fact that the rest of the world was inhabited by barbarians, so the civilization of Japan was isolated by the deliberate choice of its sagacious and resolute masters. We read the bewildering record of the long succession of sovereigns on the Nile, and the long sequence of their monuments, great and small, rich and simple, all speaking the same language of slow and natural evolution without the interference of foreign influence to any extent which need be reckoned with. So we do through the smaller lapse of time in Japan; a smaller lapse of time but marked by the same artistical conditions.

Here is a Japanese lacquered box of a well ascertained epoch and the work of a well known school; it dates from the close of the seventeenth century. The box is oblong and about seven inches long but much smaller in its other two dimensions; it is covered all over with a pattern of lozenges separated from one another by a continuous surface of sprinkled brown and gold (what is called *aventurine*) and the lozenges succeed one another without interruption over the whole surface, except that the pattern is broken by a very few circles filled with the significant badges of the noble house to which the owner has belonged. Each lozenge of the pattern is composed of two cranes with spread wings and raised heads, and they are so entirely conventionalized that it is only after somewhat careful examination that one sees that the set figures have any representative meaning at all. Here is another and an older box, round, or nearly so, and adorned everywhere with what appear to be circular figures; which figures are found, on closer examination, to be made of dragons of a recognized and familiar type, each serpentine body being curved into the

medallion required. There are one hundred and nineteen of these dragons, and hitherto they have baffled investigation, for it seems that no two of them are really alike. This use of a natural or a quasi-natural object, formalized, conventionalized, and carefully arranged as the unit of the very simple pattern is not indeed peculiar to the Japanese, but it is especially familiar to that artistical race and has been carried to more successful results in Japan than elsewhere. Even the wonderful non-natural flowers of the Persians, those flowers which charm us in the rugs, the silks and the printed cottons of the nearer East and of which Persia is the central workshop are less important in the study of decorative art than those conventional patterns of the Japanese, which are made from the study of natural forms; and this because of the extraordinary knowledge and subtle feeling for the natural object, which is retained even in the most abstract conventionalization.

This singular and unique achievement of the Japanese seems to come from their constant and intimate association with an accepted way of drawing everything in nature. We have a fairly good idea of this accepted way of drawing from nature in the little books of patterns which were once easy to buy in our shops and which served the workmen of many generations. The chaser or carver or lacquer-painter was free, indeed, to vary the approved method of representing plum tree or wild goose or grass blowing in the wind; but he would do so at his own risk. Serious attempts have been made to show that the art of the European Middle Ages, the illumination of manuscripts, the designing in translucent material for window fillings, even the architectural sculpture of the church portals, is all reducible to just such severe conventionalism and to such well known and universally accepted rules for drawing the object as we find in Japan. It has not, indeed, proved possible as yet to show such a systematic and universal acceptance of tradition in Europe. But, indeed, tradition is the life of graphic and plastic art, and the difference between the practice of the bold innovator and reformer, as he thinks

himself, and the patient workman who designs as his father did, using the same patterns and modifying them only in minor touches, is a less radical difference than we are apt to assume.

There is another reason why the arts of Japan, as they have flourished during the four centuries which ended with the beginning of the present régime, are receiving the most careful observation. There is a perfectly unbroken gradation from their paintings of the most elaborate expressional and significant character to the simplest patterns which are used in such boxes and such chests of drawers, low tables, pipe cases and scabbards as the collector especially loves. Europe had been studying the fine arts of Japan for twenty years, or from 1860 to 1880 or thereabouts, without understanding or supposing for a moment that a great system of painting worthy to be studied alongside of that of Europe existed as the nucleus and crown of the ornamentation which was brought freely to the western market. Now that we know what Japanese painting has been, and something of what the older and more original Chinese painting of the great schools was at one time, such theories as that mere conventional ornamentation was familiar to the Orientals, while for significant and representative painting we must look to Europe, are gone never to return.

It is true that the European preachers of a newer and more vigorous decorative design, when they began to teach and urge and exhort about the middle of this present century, had shrewd inklings of the truth; but they had little means of demonstrating the truth and none of proving their point to the satisfaction of men. They suspected that there was no radical and final distinction between decoration and representative or expressional painting, but, while seeing this but dimly themselves, they had to convince the world of it. They had only the small and in a sense contradictory evidence of the European Middle Ages and the years which immediately succeeded the Renaissance in Italy; and they did not half know even that. Now we know that what

there was in Italy, in France, and in England, then unaltered, unrestored, and unchanged, was sufficient to prove their point; but archæological science had then only begun; the power of comparing these works of the past was not as yet developed; the very existence of the most important uninjured works of art was hardly known even to the students themselves. Now we know that one who would walk through the upper and the lower churches of St. Francis at Assisi would see in the mural paintings of religious or legendary subject, combined with their painted borders or frames of purely conventional flower forms, as complete a demonstration of all that could be proved as to the inherent decorative quality of fine art as in all the importations from Japan. The same spirit that cast the draped figures which stood for the action of a church legend in the central composition, guided also the hand of him who cast the flowing curves and the clustered flowers of the border; nor is there any reason to suppose that the artist of the one was in any way a less or more esteemed, a less or more artistical, workman than his fellow. The exterior of the Cathedral of Florence and its famous bell tower show us perhaps the most beautiful conventional patterns which Europe has to offer. The straight bands and the curved archivolt are set with rosettes and formal flower-like patterns of exquisite design when considered separately, and of faultless harmony in their combination. The spirit of Gothic building, never strong in Italy, had already passed away, in spite of the pointed arches with which these great buildings are constructed; the sculpture was not to be a part of the great stone mass, for the classical spirit, never dead in Italy, saw to that and provided that each statue should be an isolated and in itself a perfected work of the artist, but the statues are set in niches which form part of the wall design, and the bas-reliefs large and small are included in the ornamental string courses which make up the exquisite surface ornament of the lower stories of the bell tower. These sculptures are as perfect as the knowledge and the handling of the time

could make them. Conventionalizing in the figures, in the drapery, in the details of background or accessory is neither more nor less visible than the conventionalizing which has made the formal patterns of the inlay out of natural flower forms. In either case the artist has cared for nature only so far as the representation of natural form and the reproduction of natural light and shade would help him in his designs.

If, now, we examine the different parts of a general scheme of decorative design, we shall find that while all the details and all the larger masses or sub-organizations which form part of the general composition are equally intended as decoration, they differ widely in the force and value of their decorative effect. As admirable illustrations of this may be mentioned the painted vaults of Assisi already referred to, or the painted vaults and also the lunettes of the Spanish Chapel attached to the cloisters of Santa Maria Novella in Florence, or the ceiling of San Sebastiano in Venice, with paintings by Paul Veronese, or the famous Library Chamber at Sienna, the open galleries of the Vatican, or the Sistine Chapel. In all these interiors of renown and of beauty equal to their renown, there is painted decoration of many kinds, all "keeping its place" so well on the walls and the roofs that nowhere does a picture "make a hole" in the wall, even if its historical or legendary subject be of importance—even if the treatment be bold, vigorous, and complete. The borders of what we call conventional flower-form and leaf-form keep their place, and so do the great figure compositions which we are accustomed not to speak of as conventional but to imagine as purely representative or expressional. In Michelangelo's ceiling, the splendid vault of the Sistine Chapel, architectural forms are indicated which have nothing whatever to do with the simple groined vaulting. Human forms are painted in connection with the suggested architecture, and the whole together makes up an unequalled composition. This is what we call religious painting; that is to say, we imagine, or assume, that it deals with Old

Testament prophets, legendary sibyls and New Testament apostles and divines, while in reality it deals, architecture and human figures, limbs and drapery alike, with form gradations of light and shade, gradations of subdued and tranquil color, and these so mingled that no man can say where chiaroscuro stops and where color gradations begin. Now it is certain that no student of art is safe in his studies until he has learned that the purpose of the painter is to produce this effect of light and shade and color. You call Michelangelo a religious artist; and it is true that he was, as we find in his much written biography, a religious man, a philosopher, and a mystic, but with strong inclinations toward obedience and toward the recognition of authority. In his painting, however, as in his sculpture, he appears indifferent as to whether it is Moses or Leda that he represents; his portrait statues of two very reprehensible princes of the Medici are as carefully worked as his Virgins, and when he had to adorn the tombs of those two scapegrace nobles, he set upon their sarcophagi and below their portrait statues, colossal male and female figures expressive of nothing except his own splendid knowledge and profound feeling for grandiose form. You call them *Twilight* and *Dawn*, *Night* and *Day*; you might with equal propriety call either pair of them *Force* and *Nature*, or the *Male* and *Female Principles of the Universe*; nothing but the fact that they were called *Night*, *Day*, and the like, in the sculptor's own lifetime makes it worth our while to perpetuate those accepted names for the mighty statues. No respect for tradition and no religious awe kept the great sculptor from treating the risen Christ of the Minerva Church in Rome as a piece of thorough sculpture in the nude; a work of the loftiest art, and perhaps the most magnificent male body ever molded by even Michelangelo. And so in the paintings of the Sistine vault; in all the figures he used that type of the human form which he may be said to have invented and which grew naturally, as is clear, out of his own peculiar feeling for physical humanity. Nude or draped, the human

figures are as completely the inventions of the master as are the strangely imagined cornices and consoles upon which they sit or stand. The very perspective, which changes its assumed point of view with every twenty feet of length, is not more a piece of convention than the superb groups and single figures which fill the oddly conceived architectural framework. It is evident that if Michelangelo did not design flower patterns, or suggestions of floral sculpture, it was because his mind and heart were otherwise affected than by such adornments as those and he preferred the severe moulded string courses and ressauts of his cold, classical architecture to any more florid surroundings. But the whole ceiling is as purely a work of decoration, and is composed as absolutely with a view to its decorative effect, as are the flat, cool, grave, early landscapes of the famous band of pictures below the windows or the painted framework which surrounds each one of these.

The interest of each individual work of art carries the thought away continually from its main theme, but this theme is at present the comparison between one kind of decorative art and another kind, and the great superiority of one over another sort of decoration. It is in this that the great importance of human subject in art is most plainly seen. There is no decoration of "the flat" to be compared with the painting of human subject, or that which is the same thing in principle, the use of bas-relief in the same way. There is no decoration of more salient and more pronounced parts of a building to be compared for a moment with sculpture of human subject. The Parthenon frieze, even as we have it now in detached fragments ten feet long with its figures sadly broken and defaced, and its painting in strong and vivid colors wholly gone, is the most decorative piece of wall work that we know. What it was to the Greeks, when it was still high up under the shadowy ceiling of the pteroma and prepared for artistic effect at that dim height by the relieving of the figures in color upon a colored ground, and the

carrying out in farther coloring or in gold of every part which was found not to tell its tale thoroughly—what it was to the people who saw it newly finished we cannot conceive, because no man living has seen a piece of painted sculpture of great merit in place in a monument. The Greeks were not decorative architects, in the usual sense,—they cared little for architectural sculpture, if by this term we mean sculpture which is characteristically fit for its place and essential to the building; they distinguished boldly; and they used realized human form, human form as near the life as the wholesome conventions of art would allow, and this they contrasted with the simplest, the slightest, the least aggressive or self-assertive of carving that ever a great building race found pleasure in. The decoration of the outside of the Parthenon, or of the Zeus-Temple, or the Artemis Temple, was of two kinds: the most abstract adornment possible, such as flat tints of color, delicately chiselled mouldings giving shadows or shades which could not “carry” far, anthemions and egg-shaped roundings of the most subdued and least realistic character; and with this there was contrasted faultless and immeasurably grand sculpture of the human body and such drapery as was found needed to help to support the nude. It is all decoration together; but decoration in the two most contrasting shapes.

The artists of other nations have worked on somewhat different lines, and have not cared to make so sharp a distinction between the most highly wrought adornment and the more formal and slighter lines and curves and swellings and hollows which are not even in the remotest way studied from nature. Artists of other schools have found it more in their way to carry the moulding into suggestion of leafage, the suggestion into a more nearly realized system of foliation and the ramification of leaf, stalk, and twig, these vegetable forms into the semi-animal grotesques which combine with them so easily, these last into the suggestion of human form, and so on to representative human

sculpture, or painting, or the combination of both. The Roman imperial architects invented that strange system of scrolls, foliated arabesques and half realized leaf-work, mingled with animal and human form of which, indeed, there is some left in good condition, but our knowledge of which is mainly derived from the fifteenth century imitations. The Romans also loaded their mouldings and bands with ornamentation designed on the Greek lines but richer, and they diversified the Corinthian capital in a hundred ways. Modern writers are apt to blame the workmen of the first three centuries A. D. for their love of florid work, not remembering that the highly wrought human sculpture is gone. Statuary was as common in Rome as electrical lamp-posts in a modern city; and the Romans worked their humbler details up toward the elaboration of the loftier work—following a scheme different from that of the Greeks but not necessarily inferior. The Byzantines and their contemporaries in Italy, powerless in sculpture, were yet able to adorn “the flat” with magnificent compositions of intense and energetic coloring, and the Mosaicists of these times treated the patterns of their frames and the richer patterns of the imperial robes with precisely the same touch, which touch is then carried into form and face of man and woman and into the suggestion of divinity. As they did in color, so did the northern Romanesque and the northern Gothic builders in carving, and that with such astounding energy and with so great and profound knowledge that their work remains as unmatched and as distinctive an achievement in art as even the work of the Greeks. It is smaller in this, that it did not reach so near to perfection in any one path, but it tries for more than the Greeks tried for and is triumphantly successful in overcoming difficulties. The Renaissance men in Italy and the sixteenth century men in the North went on with the teachings of the two schools at once,—not consciously indeed, knowing nothing of the Greeks and inclined to despise the thirteenth century men, but working as they had been taught by those ancients as absolutely as though

it had all been written down in text books for them to study. And throughout it all there is this same conviction,—this same energetic following of one scheme,—this one thought of how to make the Work of Art admirable and impressive, at once attractive and imposing, tragedy such as Shakespeare's, with the human comedy freely intermixed. And even as Shakespeare allows his men and women to speak in nobler accents than those of common humanity, while yet they are perfect man and woman and nothing else, so the artist in these great works has known how to give, by the free and wise use of his recognized conventions, charm and dignity to his figures unknown to the men and women from whom they were studied and decorative effect to his flowers and his struggling monsters which the natural plant and the natural creature in that place would never have had, and he has ennobled and glorified his art by the very act of treating it as pure decoration.

How then of the artist who is also a mystic? How of him who is filled with the desire of expressing human emotion by the painted or sculptured face? And how of him who thinks with Watts that he has a moral lesson to teach and a doctrine to deliver to the world, or of him who, as Laurens, would fain make history seem alive to those who would otherwise but read the wordy abstracts of it in books? The answer to these questions, for there is but one answer, is no more embarrassing to the student of art than the answer to those other questions about the connection between sound and sense in music or in verse. Music has it nearly all sound, and the sense, except as it is musical sense, or a sense of sound alone, is of minor importance; verse has it nearly all sense, or significance, or the direct appeal to the intelligence, while sound is of minor importance. The two arts differ in this, that the one is much more nearly pure art and in fact almost absolutely pure and abstract, while the other is far more intellectual than artistic in its common forms. Nowhere, however, is music free from the suggestion of

that which is other than musical, and nowhere is verse free from the appeal to those higher senses which are the recipient of artistic impressions.

If we read with care the following lines : —

“ We wandered to the Pine Forest
That skirts the Ocean’s foam,
The lightest wind was in its nest,
The tempest in its home.
The whispering waves were half asleep,
The clouds were gone to play,
And on the bosom of the deep,
The smile of Heaven lay ;
It seemed as if the hour were one
Sent from beyond the skies
Which scattered from above the sun
A light of Paradise ! ”

the impression produced is in part mere regret, in part the sense of what must have been a beautiful scene and a charming hour to spend, in part sympathy with the writer, if we have interested ourselves at all in his life, and in part the mere thrill and glow of spirit which the triumphant beauty of the verse has imparted. Now to analyze the twelve lines and to decide to our own perfect satisfaction exactly how much of each of these impressions the verses have given us, and what part of the series of words has given the one and what part the other impression is beyond ordinary critical or metaphysical enquiry ; but it is not hard to see that the admirable shock of surprise given by the strange scansion of the first line is maintained throughout the brief description, and the attention of the reader is called to the natural scene, to the ordinary phenomena of nature, in a way that prose could hardly have done, while at the same time the sense of beauty which resides in the ear is satisfied as well as surprised, soothed as well as startled, by the exquisite harmony of the verse. In music the sound is nearly everything, and one listens to a symphony well performed with shut eyes and reposing intellect,

the harmony flowing over and through one's receptive being. Immeasurable pleasure is received, but a pleasure no more capable of accurate description than that which comes from the delicate appeal to any of the physical senses. Poetry is capable of this charm, too, but it cares still more for the more direct appeal to the intellect, the appeal to thought, memory, pride, love, holiness.

The arts which appeal to the eye are between music and poetry in this respect; they are less purely artistic than music, but vastly more limited to the artistic appeal than poetry. To put this in other words, music is almost pure charm. Poetry is largely charm but still more largely intelligence; the arts which appeal to the sense of visible beauty are mainly charm, but they too have some of the intellectual appeal which poetry has. That is to say, they may have such appeal to the intellectual being, and when they do they are very apt indeed to lose something of their decorative value, that is to say, of their appeal to the sense of delight. They lose or are apt to lose something in charm as they gain something of that which the art of words, prose or poetry, is especially charged with. If, indeed, one could express lofty and remote thought in sculpture which would have the greatest possible artistic charm, which would have the highest decorative value, then, indeed, would art be at its culmination so far as we can judge. Unfortunately, that does not happen. The artists who have gained very great power are seldom those who have the religious, the patriotic, the moral gospel to deliver; and they who have stories to tell and history to teach may not, indeed, themselves go far astray,—man for man they may achieve something worth achieving,—but the body of art is in a bad way when its workmen are more interested in other thoughts than in artistic ones.

Why is it that the human subject makes better decoration than patterns and cloudings, waves and scrolls? There must be discrimination here between one kind of unmeaning pattern and another. If a wall, as of a highly adorned room, has been covered

for a while with silk, even of a beautiful weave and a noble design, and this has now been replaced by a mural painting of some value and dignity, the visitor who sees for the first time the painting, which we will suppose to be of human subject, is amazed at the superiority of the adornment which has now been given to the wall and indirectly to the whole apartment. This is partly, as the trained observer readily perceives, because the human subject allows of so very much more subtle gradations and so much more delicately disposed passages of color. The nude is, of course, the most worthy of all subjects of painting, and the carnations and the grays alike are, or may be, of a charm and delicacy utterly inimitable by anything woven or stenciled or anything produced by flat patterns of even the greatest complexity. The human frame, too, shows its noble structure, its complicated and significant make through the surface painting which stands for it or represents it, and the imagination leaps to the conclusion that the color is not merely color, the soft gradations are not those of the lifeless stone, but expressive of that conscious life which we associate with humanity. Drapery, too, and even garments of artificial cut and elaboration are, when shown as worn, capable of the same conventional treatment as the body itself, and are of singular interest, partly because of their close connection with the dignity of the human frame which they cover, and partly because of the delicate painting which their surface also allows.

It has been the misfortune of some men unpractised in mural painting, to have large scale figures to handle, and the result has been unfortunate in the way which these conclusions would lead us to expect. The doublet, the cloak, the modern coat or gown are left flat, as it were, or too nearly flat. Their large surface in the figure above life size is not filled with that interesting painting, as it might be termed, for which opportunity was offered. All of us who study painting on a large scale will recognize at once the difference in this respect between the work of a sixteenth century Venetian, even of the second order, and a

modern mural painter, even of a tolerably high rank. Few are the moderns who have known how to give to the clothes worn by their figures the interest of gradation in color and in light and shade which their silky, or leathery, or duller woollen surfaces might have allowed. Few are the Venetians, even of secondary rank, to whom a red cloak or a striped fur facing is not a delightful opportunity for painting of the most interesting sort. All the colorists have the same record. Bellini and Ruysdael enjoy equally the chance to fill a limited surface with gradation, at once significant and lovely. Even where the sombre cloak of a Titian portrait, or the steel breastplate of a Rembrandt, disappears into the gloom of the background the delight which the artist has taken in the mere manipulation of the glowing or dull surface is as evident as his delight in the face itself or in the speaking, nervous hands. The primary reason, then, why human subject is better decoration than stripes and zigzags is in the vastly greater opportunity for charm which the vastly more complex subject affords. There remains, however, the more difficult question why cloudings, mere studies of gradation in the abstract, are not as delightful as human subject. We all of us love landscape. Landscape painting is, indeed, the art especially of the nineteenth century; and of all those features of landscape which go to make up this art of our own time, cloud, haze, mist, and vapor are the most entirely its own. The gradations which the summer cloud allows in pure light and shade, or in light and shade inspired by an exquisite suggestion of color, are of infinite complexity and inimitable by man. The changes and modulations of clouds, as one sees them from the mountain and studies them on their own level day after day, are so unspeakably charming that life might be spent in studying, artistically, their combinations of delicate color and light. M. Edmond About expresses some surprise at what makes many people go up Mont Blanc, a desire to see the reverse of the clouds, which resembles very strangely their under side. The answer is that one cannot see too many sides of a

cloud, and that it is true nature is only known to those who see it from above and from below and from where it cannot be seen at all, from its very heart. There is no apparent reason, then, why clouds should not of themselves form charming decoration; and one might imagine a frieze at the top of one's favorite sitting room filled with cloud studies by another Turner which would seem of infinite and unceasing interest. Why, then, is it not an obvious resource for the decorative artist to fill his surfaces with abstract harmonies of glowing or of pallid color, which, indeed, he might study from the clouds of heaven, but which could be still combined for the decorative work in hand? The answer seems to be that we do not really care profoundly for the clouds, except in connection with the landscape. Turner, in his greatest days, devoted himself almost wholly to the clouds, and that not to careful studies of what we call cloud-form, meaning the apparently rounded and massive far-away clouds of summer, but the vapor, the steam, the reek, the driving spray close at hand and almost enveloping the observer. He painted with intense delight the struggling into sight of yards, masts, and sails through an ocean of white vapor,—the mingling of the steamboat's coal smoke with the gray cloud of the shallow water and the near shore,—the driving away, side by side, of a cloud of smoke and a cloud of steam, with their essentially different and severally peculiar ways of behaving as the wind drives them before it. But never does he give us these studies of cloud without the rest of the picture,—without the steamboat or the rocky shore or the struggling whale-ship. And what does this abstention signify? Why did Turner feel himself called upon always to represent or seem to represent something actual? Why did Paul Veronese give us always men and women engaged in some apparent occupation, doing something, in short? In sculpture it is easier to understand the motives of the artist. As what he seeks is form alone, he has only to pose the figure in the attitude which has occurred to him and to model it with those subtle peculiarities of surface which

his mind has called up. He has only to design his figure, in short; and he is free then to call it by what name soever he pleases. He may tickle the ears of the groundlings by giving it a sentimental or a patriotic name, but it is to him and to all serious students of the art a work in form, and nothing else. In painting, however, the case is somewhat different; and it is not form alone, nor light and shade alone, nor even light and shade and color investing carefully distributed masses, which the painter seeks. His art comes nearer to that art of literature of which we have spoken than sculpture does; and it seems inevitable for him to say something about a tangible fact, action, or incident of more general interest. Why? The answer seems to be closely connected with the as yet unformulated answer to the question, What is Beauty? In some way the power of association in the human mind is so very strong that the reference to the natural objects and the natural incidents with which it is familiar, is an immense assistance to finding that painting attractive which seems to relate the incident or to state the fact. The art, not being as abstract as sculpture, is not allowed to deal so much in abstractions, but must record more closely, as it has larger opportunities of recording.

Have we then to modify the assertion made above as to the essentially decorative character of all the fine arts of visible beauty? If the human mind has so strong an attachment to natural objects that the artistical representation of these objects will always be more attractive to it than color and light and shade, however beautiful in the abstract, in what sense are we still to maintain that the great object of the arts of design is decoration? The answer is worth some trouble to ascertain and to put into words, because it is quite evident that decoration in the more usual sense,—the ornamenting of surfaces by patterns and tints, by diapers and sprinkles, by pilasters and candelabra, by entablatures and moulded string courses,—that all this kind of decoration is quite out of the way of the modern European man. The modern

European man can, indeed, satisfy himself with pilasters and entablatures when it is necessary to make an exterior look grandiose and stately enough to fill the requirements of a public building, or when an interior of size and importance sufficient seems to need a treatment like that of the exterior; but as decoration in the sense in which we are trying to use it here, as a constant feast for the eye, they are "neither here nor there"—they are of no consequence. They are helps to a sense of order and refinement, and that is well; they are costly, but they are not a noticeable part of the art of design. Apart from these, the European mind has lost its hold on decoration by abstract or merely suggestive forms. A Chinaman painting dinner plates for a few cents a day will put to use in the band around the edge of the hollow or in the radiating stripes of the marly a system of freely drawn scrolls and perfectly understood leaf patterns which he will execute as fast as his brush can fly, doing work with the unaided hand which in the Occident men would try to produce by some mechanical appliance. A Persian weaving carpets will still, even in these bad times for Oriental art, with the Parisian and the New York buyer waiting in the neighboring village, go down his rug with two borders, each made up of many narrow stripes, and the filling of the centre all carried on at once, and will produce patterns charming in color and in the perfect placing of that color, patterns which no European has ever been able to approach,—least of all the European of the nineteenth century. The Montenegrin peasant, the Russian newly emancipated serf, the Malay of the islands or of the main land, the South American Indian, even the "Kaffir" of South Africa will decorate weapons, cloth, silk, vessels of pottery and metal, with details and with a resulting effect not indeed comparable to the work of China or Japan, of Persia, of India in the old time, or of the Levant when the Moslem world was still alive, but still immeasurably superior to what the Occident could do. It is only now with slow patience that Europe is restoring, or regaining,

or remaking, its sense of ornamentation, as distinguished from expressional art. It has appeared, therefore, for thirty years past that the only decoration possible to the European world was the highly wrought painting and sculpture produced by studio-taught artists, men of renown, men with their names in the biographical dictionaries, or soon to be there, and with a recognized position as "artists" in the conventional sense. They alone, it has appeared, can produce anything in the way of decorative design; all other attempts at adornment being very obvious copies of the great work of the past; and it is on this account that it continues to be very important for us to ascertain exactly what relation this painting, or this sculpture, which is thus seen to be our only decoration, bears to the great world of decorative design.

We invite Puvis de Chavannes to paint a wall for us, and it appears that neither he nor we can design a floral pattern for a frame to it, and that neither he nor we can or will design an architectural setting to it. It appears that floral border and architectural framework alike must be taken direct from a plate in some book or from a photograph. There hardly lives to-day the architect or decorative designer who is doing these things for himself and with free vigor. But the painting by Puvis is, relatively to time and place, equal to the work of the masters of old, and by means of it the whole interior which it adorns, church, hall, or chamber, is glorified. That famous church in Paris which is called by the name of the patron saint of the great city, and also by a name which recalls the glories of Rome, that church in which Puvis has left some of his noblest work, is so built that all the walls are left free for decoration, these walls being admirably well lighted by the oculi of the cupolas above and by the ring of windows at the foot of the largest cupola. There are no windows in this church, and when one shows a photograph of it to the mural painter, or to any person interested in decoration, immediately rises the thought, Why are not other churches built in this way, that the painter might

have a chance to display his system of decoration? That is well, and the only amendment one could offer to that suggestion would be this, that the sculptor also try his hand at enriching and glorifying church interiors of this kind. Long ago the present writer, who was then supposed to be an advocate of the "Gothic revival," was asked by a person high in influence in the organization of a great Roman Catholic establishment whether he would advocate the use of the Gothic style for the church. Long ago? It must have been soon after the close of the civil war. The obvious, inevitable answer to be made was this—that a truly decorative church could not again be built in the Gothic style because there was no possibility of producing Gothic sculpture, nor, without laborious efforts at exact copying, a piece of Gothic construction; that the Basilica type, on the other hand, with broad, flat walls and a ceiling either panelled and flat, or composed of the under side of the actual roof allowed of that which the modern world was capable of, namely, painting on a large scale and with some descriptive and representative meaning. Mosaic, also, on a large scale and with the result a little more doubtful, but still of possible good fortune, and sculpture, bas-relief, and statuary alike—equally the work of the highly trained artist, the man "handled and made," the best result of our modern system of teaching. The case is the same to-day. If a great memorial building were to be built,—a church, a chapel, or a tomb,—a museum or a new wing of a museum, a library or the addition to a library,—in either case the scheme should be the same, that of affording the greatest possible opportunity to the painter and sculptor. It is not long since Elihu Vedder at an informal dinner of artists, in the course of the few remarks which he was persuaded to make "on his feet," said that the one point he had to make was this, that when architects were asked to provide a place for the mural painter they always insisted on filling it up with "pilasters—and things" and handicapped the painter badly. One would not always sympathize with that view. It very often

happens that the mural painter works the best with the straitest allowance of space and the most positive regulations as to his opportunity ; but it is certain that the essential thing in a decorative building of modern times is the painter's work—is the sculptor's work—is the combination of both together, and not the hard, flat, and dry framework which, however dignified, is what the decorative artists, commonly so-called, are able to supply. One is reminded of the statement made in the biography of Pierre Victor Galland as to the sufferings he had to undergo when he was made professor of decorative painting at the Ecole des Beaux Arts. It appears that the professor of painting knew what his duty was, and the professor of sculpture knew what was meant by sculpture, but neither of them could understand the idea of a professorate of decoration. The painter thought that his business was to teach his pupils to paint, and that no one ought to talk painting on other lines than those laid down by his department. The sculptor was clearly of opinion that sculpture was sculpture, and was to be treated as such. Galland's attempt to teach the students of the day something about the great principles which govern the combining of painting and sculpture, or the use of either of these arts in a system of decoration, was ignored or decidedly objected to by these rival professors who told him in the politest way that they had nothing against *him*, but everything against his department. This interesting statement and the evidence for it, contained in M. Havard's biography, merely shows that the artists of our older day are themselves reluctant to admit that representative and expressional art is, after all, chiefly decoration. It is none the less true that all there is good in their work, or in the work which they are holding up as models to their pupils, has come of the strong grip maintained by the men of the great old times upon the central idea, that the arts of design are primarily arts of decoration.

The worst influence that has worked upon the arts of design during the past three centuries,—an epoch on the whole not a

fortunate one for those arts, but devoted rather to literature and especially to music,—has been the separation of the arts from one another. The evil time began when it appeared that it was no longer practicable to employ the same man as designer in many ways. It must always have been evident that a given artist,—say Giotto,—was more of a painter than anything else; and at a later time that a given artist,—say Donatello,—was more a sculptor than anything else; and that such another artist,—Fra Giocondo for instance,—had had special opportunities of informing himself as to the building art and was best of all when he was designing façades and screen walls; but each of these men was considered an expert in design, and he was fortunate who could get any work of art of no matter what nature, no matter how small or large, and in no matter what material, designed by one of these masters. The tradition obtains in modern times, indeed, but the tradition only. It has weight with one here and there. Barye made his water colors and Paul du Bois, first of living sculptors, is a portrait painter of rank; Eugène de la Croix made lithographs and Whistler makes etchings; Lord Leighton produced, not a medallion, nor a little statuette, but a statue of heroic size, and that of a most difficult subject, and he found it worth his while to do so. Vedder models little studies from the antique and has them cast in silver; La Farge is a great designer and an inventor in the way of decorative windows and has done wonders with inlay of colored materials; Sargent models in bas-relief to aid his own decorative compositions in painting; Abbey is a book illustrator in the way of being an especial student of the older English writers and of the men and women, as well as of the mere doublets and kirtles which they wore; Low is an illustrator of books also, with the longing to combine the classic,—the true classic of Greece,—with the sentiment of the modern writer upon the Greek theme; and he, with Blashfield and Shirlaw, have composed treasury notes for the government, which may really be an epoch in the history of American designing.

Tiffany is occupying the Occidental world with his extraordinary achievements in the way of enamelled and iridescent glass vessels. All these American artists are named without reference to their own work or to the work of many others in the application of each man's special form of art to decorative purpose ; but Ward, French, Bitter, Warner, Niehaus, and Rhind among sculptors, Simmons, Crowninshield, Cox, Fowler and several of the painters already named have applied their peculiar work to the adornment of buildings with entire felicity. The list might be made much longer and yet the list would be but brief compared with the long roll of artists known and able in their separate arts, and also successful in some outside work or other.

The time is unfavorable to the work of the artist in more fields than one. "Division of labor" used to appear fifty years ago, as a sort of triumphant discovery of the economists and it is not hard to find passages in the more serious writers of that time pointing at the admirable results in the way of cheapness and finish produced by this same dividing up of the work of Industry and of Mechanism. It does not follow that it was ever preached as a gospel for the artist, but certain it is that it has been practised too diligently and that art is going feeble and shaky with it to-day. The painter who feels and expresses enthusiastic admiration for a carved ivory or a little bronze does not think as often as he might, or as intensely as he might, about the expediency of trying his own hand at a bit of carving on a small scale or of modelling a little group which could be cast; he does not realize how much stronger he would be as an artist, if not as a technical painter, when he had begun to design things in more lines than one. There is a kind of by-word in the studios about the sculptor's being a very bad draughtsman; this, indeed, means only that the man who habitually works in the solid finds a reluctant hand, and even an unpractised eye,—at least when compared to the hand and eye which he uses in modelling the solid,—when he tries to conventionalize form so as to subdue it to the flat surface. It means merely that the

form-drawing of the sculptor is less perfect than that of the man who draws four hours a day and three hundred days in the year; it means merely that the master in one branch is a little stronger in his own branch than in another department. As has been said above, every man will find out the branch of art in which he is most sure to work successfully. If the great principle of decorative design as the first mission of the artist be kept strongly in view, there will never be any difficulty about the man doing his best in his own best way and yet doing well, very well, in lines not so immediately his own. There will certainly be nothing to prevent his making great designs in which he may now and then, indeed, have to ask others to help him,—even as a mural painter of first rate capacity requires, even for his mural painting, the aid of other men who may each in his own small way be better than the chief himself. Seeley of London, historian and essayist, pointed out long ago that the true way of judging of the arts was to keep in mind that the muses of painting and sculpture, of music and the dance, of verse and of the stage, were the daughters of Joy, and not of Memory, that the primary object of the arts of design and of all the different arts of refinement and of creative composition was to give, as Palgrave says in his preface to “The Golden Treasury,” high and enduring pleasure. If this is doubted, says Seeley, we have only to go back to the origin of things and to estimate, not the value of an elaborate passage of Sebastian Bach, but the singing of the milkmaid,—of the Japanese fisherman in the story, “who went away slapping the sides of his boat and singing”—of the shepherds whose daily life is paraphrased and adorned by art in the idyls of Theocritus and Bion. He thinks, too, that the object of eating is more clearly explained when the hungry plowman is seen interrupting his labors to take a humble bite than when persons of refinement and of sufficient means gather around an elegantly spread board and taste delicately flavored wines. So he thinks, and so must we think, that the purpose of architectural

treatment is more readily seen in the front of a New Zealander's sacred shed with its carved and notched and indented memorial posts, than in the laying out of the porticos of Bernini; and the purpose of sculpture is more apparent in the knife handle which Luigi Vampa carved and then presented to his friend, Monte Cristo, at the beginning of their acquaintance, than in the far-to-seek thought of Vela's dying Napoleon, or the exquisite charity and faith of the monument of Lamoricière. In all these things, simple and complex, primitive and highly developed, there is that curious mixture of exterior and interior, of body and spirit, with which human life is filled. What, we might ask a young man of sentiment, what is the feeling which you have with regard to your lady love? Is it entirely the admiration of her physical charms? You answer that question with a scornful negative, but is it entirely admiration for her moral and mental nature? How about that mixture of satisfaction of the eye and reflective consideration of the past and the future with which one regards a loved person of either sex, and finds that the eye and the mind alike are delighted by the contemplation of that always welcome presence. When the question as to the relative strength of external charm and of the memory of invisible fascination is answered, then it will be time to wonder that the question as to the relative value of abstract form and color and of the significance of those representations to which form and color are given, remains not answered with absolute certainty. It is only a rash thinker who is ready to decide, off-hand, as to the exact relations between the physical and the moral sides of fine art. It remains an obvious truth, however, to those to whom fine art itself is the supreme delight, and who are happy when they can give more and more of their lives to the study and enjoyment of it, that fine art is never safe, if the single purpose of making it as charming as possible in its external character be not kept strictly in view. It is ruinous to the artist to forget this and to care more for narrative, preaching, the expression of sentiment, or what you please; it is doubly ruinous to the school, if its numbers go astray, seeking other gods than those of decorative art.

MODERN VIEWS OF MATTER

OLIVER J. LODGE, *Liverpool.*



ASKED to write on the subject of Physics and Physiology, I essayed the task, and attempted to enter upon the possible mechanism and detail of nerve transmission, and the like; for it is clear that all nervous action has an electrical concomitant; and an examination of the question whether the connection between the electro-motive force and the nervous impulse be accidental or essential, and what is the mechanism of transmission, is clearly an important enquiry.

Physiologists of late years have made so much use of delicate electrical instruments, they have directed so much attention to electrical manifestations in muscle and nerve, and these electrical effects have proved so useful a test and record of nerve phenomena, that it is just possible in some instances that they may have acquired an aspect of over-great importance, that they may be thought of as the real phenomena themselves, instead of possibly only an accompaniment of relative minuteness and insignificance,—a secondary adjunct which is only made manifest because of the extreme delicacy of modern electrical instruments of research.

The important thing to attend to about a nerve is the method whereby the impulse travels from place to place, the processes occurring in its substance which fit it for its purpose. What is

clear is that this is not of the nature of an ordinary electric current, not even of an electric current in a bad conductor.

A message can be delayed to any extent by replacing a telegraph wire by a bit of wet string, but the process of signalling through a few yards of string or cotton, with a high electro-motive force to drive the signal, is not analogous to the process of signalling through a nerve; for the nervous impulse has a definite velocity, slow no doubt but definite, and at any instance at a given place it has either arrived or not arrived. The disturbance passes a given place at definite speed, and with an intensity the same all along and almost proportional to the initiating stimulus.

But with an electric pulse travelling along the string it is different; that has no definite speed of travel, it is of the nature of a diffusion. Its detection at a distant end is simply a question of the sensitiveness of the receiving instrument. If that were infinitely sensitive it would be detected at once, or at least with the speed of light; whereas if the receiver will not respond except to a considerable potential, or a considerable current, it may not be able to respond at all; or supposing that it is able to respond ultimately, the lapse of time before it responds may be anything, from one hundredth of a second to a minute or an hour. Some infinitesimal disturbance arrives at once, and then gradually increases in strength until it can be detected. The travelling of a wave or of a nervous impulse is entirely different from this, its arrival is more like that of a bullet,—which has either not come at all or come wholly.

The laws of the conduction of electricity along a well insulated string are precisely the same as those of heat flowing through a slab, or along a bar well wrapped in cotton wool and protected from cooling influences. If cooling is allowed, then a similar allowance must be made for the string, if the analogy is to be preserved, that is to say, the string must be allowed to leak slightly all along its course.

Moreover there is another difference. As I understand the

results attained by physiologists, the electro-motive force observed in nerve is chiefly radial in direction, that is to say, it acts between the axis of the nerve and its sheath (when it has an axis and a sheath), and barely, if at all, in the longitudinal direction. It does not seem certain that it has any longitudinal component at all, although it is transmitted in that direction. It appears to be transmitted sideways, it is set free or displayed by the agency of something which travels along the nerve, but this agency does not appear to be electro-motive in the ordinary sense; there does not appear to be a longitudinal gradient of potential; what gradient of potential there is appears to be radial, from axis to sheath, or vice versa. A stimulus applied at any point seems to make the core of the nerve positive to the outside, and this difference between them seems to excite or transmit an impulse longitudinally, which as it arrives sets up momentarily a similar difference or negativity of the outside: giving rise to a momentary change of potential which can be detected by the terminals of a galvanometer or electrometer applied to the nerve at any two points; but the agency which travelled, and liberated the electricity so to speak, remains just as much in the dark as before¹.

(1) A few ideas as to possible modes of nerve transfer occur to a physicist, and may conceivably be suggestive to physiologists who have a vastly greater acquaintance with the facts to be explained. Without apology, therefore, I would suggest that perhaps a nerve fibre has not a conducting structure at all, but a capacity structure. It has a leakage conductance, corresponding to that of any other thread moistened with weak saline liquid, but no specific or effective nervous conductance; but it has, I suggest, a radial capacity, as if it consisted of a series of cylindrical condensers packed end to end. A longitudinal capacity too, very likely, with all the condensers in series, provided they are not insulated from each other, but that is insignificant in comparison with the radial capacity, by reason of the enormous number of them in a small length. Such longitudinal capacity would show itself as a kind of polarization when a steady current is driven along the nerve, each condenser becoming slightly charged; a reversed current should therefore for the first moment flow more easily; and to an alternating current the extra polarization resistance would not be offered. I have heard that an alternating current along a nerve does experience a somewhat lower resistance than a steady current; but if so the true conductance of the nerve fibre, considered as an ordinary conductor, would be correctly measured by the

Yet until this agency is brought to light all the physics of nerve physiology remains in a crude and imperfect state, and the physiology of special organs of sense cannot be completed; because in seeking how it is that peripheral organs receiving the energy of an external stimulus convert it into that which is appropriate to be transmitted along the nerve, we can have little hope of being able to solve this question until we know what form of energy it is which is thus capable of travelling.

That either a mechanical, electrical or chemical stimulus will excite a nerve is true enough; but the statement is no more theoretically illuminating and informing than the equally true statement that if you make a body hot enough it will emit light, without any attempt to explain what light is, or by what process it is emitted, nor why nor how heat energy (that is molecular vibrations) can be converted into light energy (that is etherial waves).

But then physicists must admit that a very short time ago this latter explanation could hardly have been given with any precision,—indeed even now it cannot be said that the details of the process are thoroughly clear or free from points of legitimate

steady current,—the current it is able to transmit when its polarization is complete,—that is when all its condensers are full. The apparent extra conductivity shown by a nerve to an alternating current would not be true conductivity, but would be a capacity effect. If R is the resistance measured by a long continued steady current; if R^1 is the resistance offered to an alternating current of frequency $p/2\pi$, and if there are n condensers in series each of *longitudinal* capacity s/k ; then

$$\frac{1}{R^1} = \frac{1}{R} + \frac{ps}{nk}$$

But the individual *radial* capacity would probably be greater than s/k , say s ; and the aggregate radial capacity would be estimated as

$$S = ns = \frac{n^2 k (R - R^1)}{p R R^1}.$$

I would suggest further, that on the arrival of a stimulus each nerve segment becomes momentarily charged,—negative outwards, positive inwards,—and that then it discharges into the next, charging it in the same way; and that

controversy; only steps towards an explanation have been made, and some of them have been made within quite recent years,—some within the last two years; hence it is no wonder that the more difficult question, by what means a nervous impulse is excited by a physical mechanism, or what it is precisely which goes on in a nerve and how it is excited by a mechanical or electrical stimulus to the peripheral organ, still remains unanswered.

In attempting, not to answer it but to indicate some facts which must probably be taken into account before an answer can be formulated, I find myself involved in an entanglement of recent research into the structure of matter and the nature of what has been called the ultimate atom, out of which sooner or later something is bound to emerge in the physiological direction, though what that something may be I will not attempt to predict. I will merely say that the fact that a cathode—a negative terminal—is the most active stimulus for a nerve, will be seen to derive some possible illumination, or at least to be rather suggestive, in the light of what follows.

The facts and researches to which I allude are not however as yet generally known, and possibly have not (the most recent of them) even been heard of by physiologists; so I propose to utilize the space allotted to me by an attempt to sketch the main

into the next, and so on, until the last discharges into and stimulates the muscle. The conditions for the discharge might very possibly be the dead-beat condition $L = \frac{1}{4}SR^2$.

The time-constant of each condenser would depend on the product of its resistance and capacity, and so its order of magnitude would be sR/n . This represents something like the time required to charge and discharge the condenser, with whatever electromotive force may be available in its structure: the source and seat of the E. M. F. being a matter on which I shall be silent: though the partial similarity of nerve electricity and muscle electricity, and the ready modification of muscle into an electric organ, suggest that such an E. M. F. is certainly forthcoming from live organic tissues.

The time taken to travel along a length of nerve having n condensers end to end, would therefore be of the order R_s , which could be measured as

$$\frac{n k (R - R^1)}{p R^1}.$$

features of this new territory now being conquered for science. Preluding my account however with the proviso that some of it is held on a less secure tenure than other parts, and that though I do not wish to represent as established anything which is still liable to successful hostile attack, yet I shall represent what seems to me at present to lie in the direction of the truth, though at the same time fully admitting that hostility to some of it will be felt by some physicists, and probably by many chemists for a long time to come. For it lies on the frontier of both sciences and no doubt will form a battle ground between physics and chemistry for many of the early years of the twentieth century; just as in the early years of the present century there was a long discussion and controversy as to the acceptance or rejection of the atomic theory of John Dalton.

It is not to be supposed for a moment that because the atomic theory generally has made its way into universal acceptance, therefore every detailed view of Dalton was correct and substantiated; clearly there must be distinctions. Dalton's view of the elasticity of gases, for instance, was a statical view based on the idea of molecules at rest, each surrounded by an elastic atmosphere and so pressing outward against each other and against the sides of the vessel, thus raising a piston, or the lid of the vessel after a spring jack-in-the-box fashion. This was really no explana-

So the velocity of an impulse along a nerve would be

$$v = \frac{p R^2}{n_1 k (R - R^2)};$$

Where nn is the number of condensers in unit length of nerve; and this velocity can be made as small as experiment requires, by postulating a sufficient value for nn .

Suppose, for instance, the resistance measured by a current alternating one thousand times a second came out one per cent less than the resistance to a steady current, and suppose the velocity of propagation of a nervous impulse was thirty metres per second, then the number of cells or condensers per centimetre of fibre would have to be of the order two hundred, provided the longitudinal capacity and the radial capacity of each were approximately equal. These numbers are quite gratuitous.

tion of elasticity at all, but it might have served as a statement of the fact of gaseous pressure, had it been true that the atoms of a gas were stationary and surrounded by infinitely expansible elastic atmospheres or repulsive forces.

But as is well known these things were not true, and gaseous pressure and elasticity are now explained, not statically at all but kinetically, as due to a bombardment of free atoms, perfectly disconnected from one another except during moments of collision. Nevertheless this is a detail, and the general doctrine of the existence of atoms is universally accepted. A lump of matter is as surely composed of atoms as a house is built of bricks. That is to say, matter is not continuous and homogeneous, but is discontinuous; being composed of material particles, whatever they are, and non-material spaces. There is every reason to be certain that these spaces are full of a connecting medium, full of ether; there is no really void space; and the question may be asked, is this ether not in a manner itself "substance"? Is it not matter in another form? To this I should reply, and I suppose all physicists would reply,—“substance” it may be, “matter” it is not. Not matter as we know it, not matter in the sense we use the term. That term is limited, I take it, to the material bodies which are built up of atoms; it does not extend to the substance or medium, whatever it may be, occupying all the rest of space. This is only a question of nomenclature, and therefore of no great importance, but that is the sense in which the terms are, here at any rate, employed. When I say that matter is certainly atomic I by no means mean that ether is atomic. I hold that ether is most certainly not atomic, not discontinuous; it is an absolutely continuous medium, without breaks or gaps or spaces of any kind in it,—the universal connector,—permeating not only the rest of space, as I have just said, but permeating also the space occupied by the atoms themselves. The atom is a something superposed upon, not substituted for, the ether, it is most likely a definite modification of the

ether, an individualization, with a permanent existence and a faculty of locomotion which the ether alone does not possess. Matter is that which is susceptible of motion. Ether is that which is susceptible of stress. All energy appertains either to matter or to ether, and is continually passing from one to the other. When possessed by matter the energy is called kinetic: when possessed by ether the energy is called potential. All the activity of the material universe is due to, or represented by, or displayed in, the continual interchanges of energy from matter to ether and back again, accompanied by its transformation from the kinetic to the potential form and vice versa.

And having asserted this, which I have said at greater length elsewhere, [“Philadelphia Magazine”]; and adding the proviso that not by all physicists is it as yet, so far as I know, universally accepted; I shall henceforward discard further reference to the ether, in this essay, and shall deal with matter alone.

Matter consists of atoms, or molecules; for present purposes there is no need to discriminate. Chemically it is convenient to attribute slightly different meanings to the two terms, but the distinction is of the easiest and most elementary character. A molecule is the smallest complete and normal unit of any substance, it consists usually of two or more atoms, though it may consist of one; and what we have to say here relates essentially to the atom.

Is the atom an ultimate atom? Is it really and truly indivisible, is it an ultimate element or unit which cannot be split up into parts; or does the customary postulate of its indivisibility mean no more than that we have not yet succeeded in discovering a way of decomposing it; or again does it mean that if we did by any means break it up into fragments it would no longer be an atom of matter but something else? Suppose for a moment that the atom was a vortex ring in ether, for instance, which could not be split up without destruction; the splitting up would not destroy the substance of which the ring is composed, but it would destroy

the motion which constituted it a ring, which gave it individuality ; it would destroy everything which entitled it to the term "matter."

If broken up it would be resolved into ordinary ether, as a dispersed smoke ring loses its individuality in common air. A common vortex ring of air or water contains within itself the seeds of its own decease ; it is composed of an imperfect fluid, possessing that is to say viscosity, and accordingly its life is short ; its peculiar energy being dissipated, its vortex motion declines, and as a ring it perishes. But imagine a ring built of some perfect fluid, of some medium devoid of viscosity, as the ether is ; then it may be immortal ; it can neither be produced nor annihilated by known means ; and it is just this property, combined with other properties of elasticity, rigidity, and the like, that led Lord Kelvin originally to his brilliant and well-known hypothesis.

In the crude form here suggested, the hypothesis has not turned out exactly true ; that is to say, no one believes now that an atom is simply a vortex ring of ether, and that the rest of the ether is stagnant fluid in which the vortex rings sail about. Any quantity of difficulties surround such an hypothesis as that. Its apparently attractive simplicity is superficial. Nevertheless it is not to be supposed that every hydro-dynamical theory of the universe is thereby denied. It is quite conceivable that a single fluid in different kinds of motion—some kinds of motion not yet imagined perhaps—may possibly be found capable of explaining all the facts of physics and chemistry :—whether of biology too is a much larger question. But these hydro-dynamic explanations are a step beyond anything that I propose to discuss now. I have only said as much as this in order to make it clear that what we now go on to, even if it were completely true, must not be held to replace and negative all the attempts that have been made, and that still will be made, to account for material phenomena by the motions or strains of a perfect fluid. I may as well say however that the motions that must be postulated will have to be

of a far finer grain, the individualization on a far smaller scale, than the original vortex-atom view, which was one vortex ring for each atom, and differently shaped or tangled rings for the different elemental atoms. If there is to be vorticity at all, it would appear that the whole ether must be full of it; it cannot be a simple stagnant, structureless, homogeneous fluid for that would not transmit light,—would not account for optical phenomena even, still less for those of static electricity and magnetism.

Unintentionally we have drifted back to the ether again, whereas I want to concentrate attention on the atom of matter. Is it indivisible or does it consist of parts? If so, how many and what are they? Can one of them be detached from the rest of the atom and observed? Can the motion of a fraction of the atom be detected and measured? Can the atom be broken up, and its constituent parts dealt with? If different kinds of atoms are broken up will they yield fragments of different kinds, or will they all yield fragments of the same kind? Can the fragments move at a measurable speed, and can the effect of bombardment, when they are stopped, be observed? Are the fragments all alike, and can they be weighed? Are they, or can they be, charged with electricity; and if so what properties do they possess when so charged? Can an atom be charged, and if so, how? When a current of electricity is conveyed, by what mechanism is it transmitted? Can its phenomena be always accounted for by the transport of an electro-static charge? What is meant by the inertia of matter? Has electricity an existence apart from matter? What is the relation if any between a unit of electricity and an atom of matter?

All these questions appear to be capable of receiving an answer; they also appear to me to be in process of being answered; and I would not say too much about the impossibility of an answer being given to some further questions before long, but they are in a different category from these, and involve a higher order of difficulty. The question, what is the nature of

an electric charge, for instance, is not among the questions which are in process of being answered with any certainty or with any simplicity just yet ; it will probably remain for some years yet a question and a challenge. Nor is the answer, when it comes, likely for a long time to be an easy one, such as it is possible to state in general terms and ordinary language.

The existence of an electrical charge we must assume : a charged body is a fact ; whether a charge can exist without a body is doubtful, but in any case we shall assume that the properties of an electric charge are those which we know and are familiar with by experiment upon ordinary large pieces of matter positively and negatively electrified. What are these properties ? They are best expressed, in Faraday's language, as a "field of force," a region full of lines of force, every line necessarily starting from a positive charge and ending in a negative one ; no line closed upon itself, every line two-ended, every positive charge being connected with an equal negative one ; no possibility of having *plus* electricity without *minus* electricity, any more than it is possible for one end of a piece of string to exist without the other end. This fact, the existence of positive and negative charges, we must assume too : they exist, they have opposite properties, they are like opposite aspects of the same thing, or opposite elements of one compound ; or opposite strains (as J. Larmor puts it)—a right-handed and a left-handed strain in the ether. Whatever they are they exist, and their explanation must be waited for.

The charges themselves are after all only the terminals or boundaries of the field : the whole field of force itself is the most real thing ; one cannot say that the charges are the cause of the lines of force, or the lines of force the cause of the charges, they simply co-exist. The lines of force represent a structure of some kind in the ether, they need no "matter" for their existence, they can penetrate what we call absolute vacuum, they are clearly an ethereal phenomenon ; but what about their ends ? Can they

terminate except on an atom of matter? The answer is uncertain, but at any rate we can say this, that never experimentally have we *known* them to terminate except on a material body. From body to body they reach, and one of the bodies is positively charged, while the other is negatively charged. That is what, at least to begin with, we must assume as universally true.

The manner of starting such lines into existence is familiar. Any two different bodies put into contact and separated will usually be found joined by such a field of force, provided precautions are taken that the ends shall not slip or leak away back to each other during the separation process.

Once the field is established, it may be carried about; but it has gradually become clear that the field is carried *through* the ether and not *with* it; in other words the field is not really moved, it is truer to say that it ceases in one place and starts in another, that as a charged body moves about its lines of force are perpetually decaying on the side of recession, and being generated on the side of approach; continuing constant in number, so long as there is no leakage, but not possessing individuality of existence. The abandoned region of ether is relieved from strain, and the encroached-upon region sustains the strain.

This transfer of the lines of force has a singular result; a result unguessed by Faraday: a result barely explained even by Maxwell; it interposes a certain obstacle to change of motion. It does not simulate a resistance, or friction, or force of any kind,—that would tend to bring a body to rest; but it simulates an inertia, the precise opposite of force,—a power of moving where no force acts—a property requiring an unbalanced force to change the motion, or even to stop it. But matter alone, uncharged, possesses this inertia; the effect of any charge on it is merely to increase the ordinary material inertia or massiveness,—necessarily to increase it, whether the charge be positive or negative, showing that it is proportional to the square of the charge or to the charge and the potential conjointly;—and the

precise value of the increase has been calculated both by Professor J. J. Thomson and by Mr. Oliver Heaviside.

Hence there is discovered a new kind of inertia, an inertia-reaction to mechanical force, obedient to Newton's second law, but not a measure of quantity of matter as we have hitherto known it. It is not proportional to mass, possibly not susceptible of weight, that is to say, it is not acted upon by the force of gravitation; and yet simulating one, and that the most fundamental of the properties of matter,—the property of inertia,—the property which is measured precisely by the ratio of any unbalanced force acting to the acceleration which it is able to produce.

Are there then two kinds of inertia: one material, the other electrical? What do we know about the material kind? Very little. It has been accepted as a property which it was vain to attempt to explain,—a property whose presence is inextricably bound up with the existence of matter, and believed to be more essential to it than gravitation. What do we know about the electrical kind? Not much, but *more*. In a sense it is intelligible, we can realize how it depends on the field of force surrounding the charge; how it is a property not located in the charge or the charged body, but depending on a modification of the ether extending all through space external to the charged body, though concentrated chiefly in its immediate neighborhood, and especially concentrated in the space between two charged bodies close together when these are opposite in sign.

That as a fact an electric current, in virtue of its magnetic properties, possessed something akin to, or which simulated, momentum, has been known to science ever since Lord Kelvin wrote that wonderful paper on "Transient Currents" in 1853; or even since Helmholtz wrote his memoir "die Erhaltung der Kraft" in 1847. But that this electro-kinetic momentum was due to a real inertia, and that the apparent inertia would not cease with the current, but would remain as a property of an electro-static charge,—a constant property, whether the charge was in

rest or in motion, just as it is a constant property of matter,—was not at that time nor long afterwards known; possibly it was not even suspected.

To-day the question to be asked is, whether there is any other inertia at all? There is certainly the electrical kind,—its mechanism is fairly and to some extent intelligible,—is there any of the material kind? The possibility of the question represents a curious inversion of the ancient order of ideas, but the question is most seriously asked; though its answer is uncertain. To Dr. Johnstone Stoney it has appeared likely that a charge can exist without the necessary presence of a material atom as a nucleus or resting place. Matter can exist without a charge, why not a charge without matter? A cat without a smile, as Lewis Carroll says, why not a smile without a cat? At any rate he has given such an isolated charge of electricity a name—"electron"; that means a unit of electric charge, positive or negative, disconnected from any material body, and of which no fractions are possible, the hypothetical ultimate "atom," so to speak, of electricity.

But we must not be too sure that such detached charges can exist without matter. As electrical units they are known and measured in electrolysis, that is, in liquid conduction of electricity, and there they are certainly associated, and inseparably associated while in the liquid, with material atoms. The whole conveying of electricity through a liquid consists in the convection of the atomic charge by a travelling atom, or it may be, the convection of an atom by its travelling charge. Atoms thus charged and travelling are called "ions": some of them are positive and some negative, and they travel of course in opposite directions along a potential gradient.

All this is familiar, and the magnitude of the ionic charge has long been known. Known it is also that hydrogen atoms have one such charge, oxygen atoms two, gold atoms three, and so on. As many as six such unit charges, all of one sign, may, it is supposed,

be possessed by some kinds of atoms,—or as few as none,—but never a fraction. An ionic charge is the irreducible minimum, as it would appear, and was styled by von Helmholtz “One molecule of electricity”: every actual or possible charge being an exact multiple of this unit. Small of course it is, but not small compared with the mass of an atom; its ratio to the atomic mass is accurately known; this ratio, the ratio of the quantity of matter to the quantity of electricity, is called the electro-chemical equivalent of the substance; and was measured first by Faraday,—afterward with greatest accuracy by Lord Rayleigh.

Nowadays, through Dr. Johnstone Stoney, Professor Loschmidt, and Lord Kelvin, we know approximately the absolute mass of an atom; hence we know, with equal approximation, the value of the atomic or ionic charge, in terms of what we call an electro-static unit; and it comes out about 10^{-11} of such a unit per monad atom. All this is the a, b, c, of electro-chemistry. Why then introduce it here? For the sake of completeness, and as a reminder to those whose physics may be a trifle rusty.

Now comes the first question:—is the atomic charge fixed to the individual atom, or can it be passed on to other atoms? Answer:—in the liquid state the charge is certainly fixed to the atom; there is no trace of physical or metallic conductivity; true liquid conduction is wholly chemical or convective; the atom travels with its charge, and at the same rate; the two are inseparable in the body of the liquid always, whether the current pass from one liquid to another of different composition or not, provided always that no part of the liquid becomes solid, forming an insoluble precipitate. This answer is rendered possible by the careful quantitative experiments of Faraday. It was and has been several times doubted, for good reasons, but for reasons whose other meaning is now understood.

But the case is quite otherwise when the matter comes out of solution, as it must when a solid electrode is reached. Then the charge and the atom separate; the electricity goes one way,

into the electrode and on through a wire; its quondam carrier or atom goes another way, into the liquid perhaps, or else stops behind on the electrode, and ultimately, it may be, escapes as gas or otherwise undergoes customary chemical accidents. It is not difficult to picture two or more such atoms, thus planted side by side or superposed in close contact, relieved from the similar charges which kept them asunder, combining, possibly by ordinary cohesion, either with each other or else with the electrodes to which they cling.

It is more interesting to follow the freed charge in its progress through the metal. How does it travel now? There is no convection or conveyance *per ion* here, it must either make its way between the atoms, or it must be handed on from one to another. The method of transmission is not that of a seed carried by a bird, but that of a fire-bucket passed from hand to hand. And yet not quite or not necessarily like that, for we have no certain means of individualizing the charge as we have the bucket, all we know is that the same amount is passed on; but an atom may conceivably receive one charge and pass on another of equal quantity,—provided there is any meaning in this attempt at individualization of electricity.

There is plainly a temptation to attempt such individualization when it is realized how like an “atom”, in some respects, this unit of charge is. It can be had in multiples but not in fractions, there is a sort of “law of combining proportion,”—most of the arguments of Dalton for the atomic theory of matter now apply to electricity. Is electricity then atomic too? Does it also consist of indivisible portions each of definite quantity and all exactly alike? It is not wise to assert such things too hastily, but that is the appearance which facts present. Dr. Johnstone Stoney, among others, has definitely faced some of the consequences of this view of electricity and has supposed that these apparently indivisible units can separately exist as “electrons”; and Dr. J. Larmor has attempted a comprehensive mathematical

theory of the whole material universe on the basis of these electrons as strain centres in an otherwise homogeneous ether.

Anyway we must admit that such electrons, whether they have a separate existence or not,—that is whether they can exist apart from matter or whether they only represent a charge existing on a material particle of some kind,—are themselves a great deal more like matter than we might have expected. Considered by themselves they possess inertia, as we have seen, and are capable of acceleration under mechanical force in accordance with Newton's Laws of Motions.

At the same time an electron is certainly not an atom, for it is capable of being separated from an atom and conveyed one way while the rest of the atom goes the other way. It appears in fact, so far, as only another name for an ionic charge, plus the postulate of individuality and identity. For when masked or neutralized, the electron is not destroyed but is merely brought face to face with an equal electron of opposite sign; the distant effects of each are then neutralized until they are once more separated.

Electrolytic conduction certainly consists in the travelling together of an atom and its charge, but metallic conduction may be either the travelling of an identical electron from atom to atom, or it may be the reception of one electron and the passing on of another; and this latter view is on the whole decidedly the more probable. Each atom receives a charge from an adjacent one, and passes an equal charge on to the one adjacent on the other side, and this process may readily be accompanied by a slight molecular motion exhibiting itself as a rise of temperature. And if, having the process of interchange of constituents in view, we contemplate what must happen at a junction of two different metals across which a current is flowing, we shall witness a curious interchange or transfusion of substance, but without change of identity, without real transmutation and without combination or alloy. This is not the place to dwell on that

aspect further : suffice it to say that the modern doctrine of the nature of the atom must have an influence on a vast number of physical phenomena, whether they occur in wires or whether they occur in nerves.

But a consideration of metallic conduction would never have given us the conception of an electron. Nor would a study of electrolytic conduction. The latter gives us the notion of an ionic charge, an indivisible electrical unit, but we find it there always associated with an atom of matter. How then have we gained the idea that it may be possibly associated with masses of matter less than the atom, or possibly with no mass of matter at all ; how have we got the notion of an electron as a separate entity ? The idea has come to different men in different ways, and we are not now concerned with any historic order ; I will take the facts in any order convenient for exposition.

A few years ago Professor Zeeman of Amsterdam—one of that race with whose colonial descendants we are sadly and badly and madly at war, for these epithets apply to whomsoever the fault of origin belongs,—a few years ago Professor Zeeman discovered that the lines in the spectrum of incandescent sodium vapor were slightly broadened by the influence of a strong magnetic field applied to the flame, when examined in a spectroscope of adequate power. It was an effect that Faraday had looked for, and failed to find, because it is very minute, and the optical resources of his day were quite inadequate to show it. Nowadays the splendid diffraction-gratings of Professor Rowland of Baltimore make the demonstration (though not the discovery) comparatively easy : and the lines of the spectrum of all sorts of metals are found to be doubled or tripled or quadrupled, or even hextupled, according to the nature of the metal and the individual character of each line. Well, what of that ? The bare fact is not illuminating. No, but no fact is really bare, except in the subjective sense that we have not yet clothed it in theory. In this case the theory was ready, it was provided for it by Larmor

and by Professor H. A. Lorentz of Leyden, a brilliant mathematical physicist of the same strong race. By these men and by Fitzgerald of Dublin the bearing of the new fact was quickly grasped, as well as by Zeeman also, as shown in his correspondence with Lorentz. At once the measured amount of the broadening, the distance apart of the components of the doubling, became the means of ascertaining the electro-chemical equivalent of the radiating matter. Electro-chemical equivalent is a term in electrolysis; what has that to do with radiation? It signifies the mass of matter associated with a unit charge of electricity. Precisely, but considered from the point of view of Clerk Maxwell's theory of light it applies to a radiating body also.

In order to emit waves into the ether an electric oscillation is necessary; a mechanical oscillation will not do. A radiating atom must contain some sort of vibrating electric charge. It may be that the whole atom, with its ionic charge, is vibrating; and it may be that an electric charge is surging to and fro on an atom, as it surges on a Hertz-conductor; or it may be that some fraction of the atom possesses the charge, and that this fraction only is set vibrating, while the remainder is inert.

This electric view of radiation, which ever since the time of Maxwell and Hertz has been in everybody's mind, is proved to be the true one by Zeeman's phenomena, *i. e.*, by the fact that a magnet influences the vibration, either accelerating or retarding or otherwise complicating it; for a magnet only so acts on an electric current—that is on an electric charge (or charged body) in motion.

Moreover it furnishes us with a means of determining how much matter, or rather how much inertia, is associated with the vibrating electric charge, for on this depends the effective result of the magnetic influence. How the measurements are made would lead us too far into detail: suffice it to say that the change in the frequency of vibration caused by the superposition of a magnetic field of measured intensity can be quite accurately

determined from the changed appearance of a spectral line when examined micrometrically; and that when this measurement is made, in the light of Lorentz's theory, the value of m/e , the ratio of the mass carried to the charge which carries it—to invert the usual order of expression,—can be reckoned.

It could also be reckoned in electrolysis: and it would be natural to expect that the two determinations should agree. But, they do not agree. For some reason or other the electro-chemical equivalent concerned in electrolysis is something like a thousand times larger than the electro-chemical equivalent concerned in radiation. What does this mean?

It must mean either that the electric charge whose vibrations start the series of ether waves that we call "light" is a thousand times bigger than the electrical unit or ionic charge associated with an atom in electrolysis; or it must mean that the mass of matter associated with the vibrating electric charge is but a small fraction of the total mass of an atom. Or of course, though that may be thought unlikely, a certain proportion of both these divergencies from the expected state of things might have to be admitted.

There is nothing for it but to examine and decide between these hypotheses by quantitative experiment. But it is not an easy matter to think of an experiment that will discriminate. It is not difficult to measure the ratio m/e , but to measure either the quantity m or the quantity e is a puzzle. Can it be possible that the atom itself is stationary, and that the electric charge is oscillating to and fro over its surface by simple conduction, as if it were a Hertz-vibrator? No, this will not do. It will not do for many reasons. The Zeeman effect would not occur if a mere conductor with an oscillating conduction current in it were put into a magnetic field. There might be some variety of that curious effect discovered by Dr. E. H. Hall (now of Harvard), but the Zeeman effect points to something more than that, it points to a real orbital motion, a motion like that of a planet or

a satellite, a motion of matter with inertia, subject to the mechanical laws of motion, and perturbed in a recognized manner by mechanical force—by the force exerted on its electrical charge by a magnetic field. But a conclusive reason against the atomic Hertz-vibrator hypothesis was known long ago: the oscillations would be too quick. Perhaps such oscillation may occur, perhaps not; but anyway they would not produce *light*. X rays, or uranium rays, or some such radiation of much higher frequency, they might produce; but from the dimensions of an atom we know that their wave lengths would be hundreds of times too small for visible light.

What remains then? Can it be possible that the ionic charge, in the concentrated and individual shape of an electron, is sufficiently individual and detached to be performing a vibratory excursion on its own account? Are we to think of the atom as having a vibrating charged tongue,—not exactly like the clapper of a bell, because it does not strike anything, but like a bead on the end of the spring of a Wheatstone's Kaleidophone,—a vibrating portion performing a definite orbit, which is perturbed by a magnetic field?

There is this much further information to be obtained from the Zeeman effect; the sign of the effect is such as to indicate that the moving electric charge is negative, that radiation is due to the vibration of negative electricity; and that the corresponding quantity of positive electricity, which must be present somewhere in the molecule, is comparatively or practically stationary.

It is no new thing for negative electricity thus to show itself more mobile than positive. Such special mobility is very familiar in the high vacuum tubes introduced and studied with such admirable results by Sir William Crookes, by Professor Hittorf and others. In a highly exhausted tube negatively charged particles are flung off the cathode at high speed, travelling in straight lines, travelling that is to say without striking each other for considerable distance, but ready to bombard anything

introduced into their path, and either to propel it forward like the vanes of a mill, or to heat it to incandescence, or both.

Such charged and flying particles, for so Sir William Crookes conceived them to be, have attracted, under the name Cathode rays, considerable attention. They are decidedly energetic and are extraordinarily penetrative. Hertz found that they could go through a metallic partition. A sheet of solid aluminium interposed as a shutter between two halves of the vacuum tube, did not act as a shutter, but as a semi-transparent window: a decided proportion of these cathode rays went right through it, or if they did not go through they appeared to. At any rate a considerable number were shot off the hinder face of the shutter by reason of the impact of cathode rays on its front face, and these fresh cathode rays continued and preserved the properties of the old. By means of such a metallic partition Lenard became able to study these rays after they had gone through into other media: into gases at different pressure for instance; and ultimately out into ordinary atmospheric air. Across the crowded obstruction of ordinary high pressure air it was not likely that these emerging rays, the Lenard rays as they are called, could travel far; they go a few inches but they soon have to stop. Nevertheless they too are penetrative and can go through metal sheets; and can affect photographic plates or the eye on the other side and give many surprising results of a kind of shadow photography. And then the next step:—the discovery by Röntgen that the impact of the cathode rays, or of the Lenard rays either for that matter, especially if they struck a dense substance that they could not well penetrate, excited shivers of another kind altogether,—a kind of vibration or shock or quiver much higher in pitch than a source of light, a vibration which may very well consist of an electric charge oscillating by a sort of conduction on a suddenly struck or stopped atom, an electrical vibration which must occur by means of the known inertia of electric charges, a vibration which

starts those hyper-rapid etherial waves known as Röntgen or X radiation.

That is what these cathode rays can do, but what are they in themselves? They are certainly electrically charged, for if caught in a hollow vessel connected with an electroscope, its leaves will diverge with negative electricity. Are they then a flight of negatively charged atoms? That is what most of us thought they were; but Sir William Crookes, by an effort of predictive genius, described them as consisting of matter in a "fourth state": neither solid nor liquid nor gaseous, but,—in some other state.

Why are they not atoms? We can answer clearly now,—for several reasons but chiefly for these two:—they move too far, and they move too fast.

First they move too far. Atoms are big things, the thousand millionth of an inch in diameter, and they cannot travel far without mutual collisions. They are constantly colliding, even in a very good vacuum. In ordinary air every atom strikes another about six thousand million times a second, and it cannot travel even a microscopic distance without collision; its free path is microscopic, or on the average ultra-microscopic. In a vacuum of course it is much freer, but still it is difficult to get a vacuum good enough for atoms on the average to travel a whole inch unmolested; but, in such a vacuum as that, the cathode rays would experience no difficulty in travelling without collision a foot, or even a yard, if the tube were long enough. How then can they be material atoms? Well, it may be said, perhaps they have a long, free path because their motion is organized, they are all moving one way, they are not a mob but an army, and random collisions are not to be expected. A good answer, and one which may very likely have been responsible for our persistent idea that the cathode rays must be charged atoms. Still however there were some who urged,—no, they are not atoms, they are either something etherial and not material

at all, a genuinely new kind of radiation,—or else they are electrons, isolated electric charges, flying off the cathode and flying along without any body to them, disembodied electricity, the pure spirit of electric charge.

The bare possibility made them worthy of careful study. How fast are they travelling; what is their velocity?

The experimental answer to this question is not hard. Whatever they are they represent to some extent an electric current, whether they contain matter or not they contain electricity, and they are in rapid movement, hence a magnet will deflect them. Everyone knew that a magnet would deflect them; it was only required to measure the amount of the curvature of path caused by a given magnetic field in order to be able to calculate,—what? the velocity? Well, not exactly the velocity, but the product of the velocity and the electric charge of each. Assume that the electric charge was known; assume that it was the ionic charge observed in electrolysis; assume that it was a kind of visible electrolytic procession of extraordinary rapidity that was going on in the vacuum tube before our eyes, and the calculation of their velocity was only a matter of arithmetic.

The assumption and the measurement of curvature by a magnet were both made; and the result came out gigantic,—the particles were moving with a speed unknown in matter before; a speed twenty thousand times quicker than bullets; a speed becoming almost comparable, still far short of that, but almost comparable with the speed of light, about one twentieth of it or thereabouts. How could matter move at such a speed as that? Doubtless they were under the action of violent forces in the immediate neighborhood of the electrodes, but their motion did not appear to depend on the persistence of a violent accelerating force; they appeared to move readily after the force had ceased, by reason of their own momentum. After all they might still be material atoms flung off by electrical forces at this gigantic speed. The potential gradient divided by the acceleration would

furnish a means of determining the value of their electro-chemical equivalent,—the ratio of mass to charge. Is there any way of determining this?

Perhaps it may be possible to measure their energy, or their momentum, and then in some way to gain an estimate of the mass of all the moving particles. It is not difficult to make a rough estimate of their aggregate energy, by letting them impinge say on the suitably coated bulb of a thermometer,—a thermometer acting as a calorimeter, after the fashion of Favre and Silbermann on a minute scale,—or say on the junction of a thermoelectric pile. Thus may the heat generated per minute by their impact be determined; but that only gives their aggregate energy and gives no information about the energy of each until they can be counted.

Similarly it is not very difficult to make a measurement of their aggregate electric charge. Catch them in a vessel of known electro-static capacity, and measure the rise of potential caused by them in a minute. The measurement is delicate and requires skill, but it can be done, and the idea of doing it is natural enough. But again what is the result? Only the aggregate charge; only a number which, in combination with the aggregate energy or aggregate momentum and the estimate of velocity on a certain hypothesis, will give the electro-chemical equivalent; that is to say, will give the ratio of the inertia to the charge of each particle. But that is no small thing to determine; it is of great interest. Especially in the light of the phenomenon of Zeeman it is most interesting to see whether the resulting value of this ratio will come out in agreement with that obtained in liquid electrolysis, or whether it will agree with that much smaller value concerned in luminous radiation.

The measurements have been made, chiefly in the Cavendish Laboratory, Cambridge, England, by Professor J. J. Thomson; and the result is of surpassing interest. The electro-chemical equivalent, or ratio of m to e , comes out not in accordance with

the electrolytic value, but in almost exact accordance with the value obtained by Zeeman.

The vibrating beads to which incandescent radiation is due, on the one hand, and the rushing particles which constitute the cathode rays in a vacuum tube, on the other, appear to be identical. The relationship is so close it can hardly be accidental. It can hardly be that it is only the *ratio* that is the same. In all probability both their masses and their charges are equal, each to each.

If it is an electron whose motions generate ordinary light, then it is a flight of isolated electrons that constitutes the cathode rays.

On the other hand if it is a vibrating fragment of the atom whose motions generate luminous waves, then it is a flying, isolated fragment of an atom which is flung off a cathode, traveling in a straight line through many obstacles at high speed and with a long free path, and ultimately, when stopped suddenly enough, generates the rays of Röntgen.

Either of these hypotheses is sensational. It were hard to say which is the more sensational. One involves a disembodied electric ghost; the other demands the splitting up of atoms into thousands of fragments, each with an electric charge of its own.

But there is one avenue still open to the commonplace. Perhaps after all the cathode rays are entire atoms,—perhaps the atom is vibrating as a whole, inside its molecule, in the Zeeman flame;—perhaps it is only the electric charge on each that is a thousand times too big, not the inertia that is a thousand times too small. This assumption would reconcile all the measurements, so far; if the difficulties of the high speed, and the long free path, the extraordinarily high charge, and many other difficulties more instinctively felt, but impossible to express briefly, could be met and overcome by special pleading.

There are thus three hypotheses to be decided between, not two; and the third or last mentioned is in deadly hostility to the

other two,—the other two between which there is no known means of discriminating up to the present date.

But how can a decision be come to, in respect to the third and commonplace hypothesis? Plainly some further measurement is necessary. The particles must be *counted*. It is not enough to determine their aggregate energy, or their aggregate charge; we must determine either their individual energy or their individual charge, and the easiest way of doing this is to count them.

Easy to say; but how to do it?

So far I have mentioned some measurements made by Professor J. J. Thomson and his co-workers, as measurements natural to be made in a laboratory; not easy measurements,—in fact very ingenious measurements, requiring novel designs and skilled construction, and accurate thought; but in these things the Cavendish Laboratory, its professors and assistants, have never been lacking.

To devise a means of counting the particles associated with a given aggregate charge, and to execute the measurements successfully, seems to me a decidedly high flight of genius. We in England have not been lacking in veneration for Clerk Maxwell nor in admiration for Lord Rayleigh, but I think we may say that we feel that the mantle of those extraordinarily brilliant predecessors has descended worthily on their successor; and that his researches,—those conducted by him personally with Mr. Everett's experimental assistance, as well as those supervised by him in the hands of exceptionally able disciples and students,—have brought lustre not only upon the Cavendish Laboratory, but upon the general pursuit of physical science in these islands.

I must explain how the counting is done; and for that purpose must refer to a totally different and apparently quite disconnected chapter of physical science, viz., the formation of clouds and mist. It was shown some twenty years ago, by Mr. John Aitken of Edinburgh, that every drop of water in a cloud or mist was condensed around a nucleus, usually a dust particle. I suppose

I may take it as known that a mist consists of water globules, rain-drops in fact only of smaller size, and that these drops represent condensed water vapor. Well, Mr. Aitken showed that vapor could only condense in presence of a nucleus, that is to say, usually upon a solid surface,—either the wall of a vessel or of some solid or liquid body. Once started into existence a drop could readily increase in size by fresh condensation; but there was a difficulty in starting it into existence. In other words an infinitesimal rain-drop could not exist. Such a rain-drop, we know by Lord Kelvin's theory of vapor tension would instantly evaporate, no matter how moist the air around it was. How then can *any* rain-drop exist, since, it would be thought, it must be infinitesimal to start with and gradually grow? The same kind of difficulty has been felt in Darwinian evolution concerning any finished organ whose early stages must have been useless, and therefore uncondusive to the survival of its possessor. There is no such difficulty about an eye, because the merest glimmerings of light must have been useful; but the difficulty is, or was, felt about the electric organ of some fishes, which could hardly be usefully destructive until well developed. The initiation of the ordinary rain-drop is now explained: it never was infinitesimal, it started condensing upon some finite foreign surface or nucleus; for, as Mr. Aitken shows, if the damp air is carefully filtered through cotton wool so as to exclude all foreign particles, then no mist can form, the vapor can be saturated and super-saturated; the walls of the vessel may run down with condensed moisture, but the inside dust-free space remains perfectly clear and transparent.

The nuclei in this, the ordinary, case consisted of dust particles. But now what is the result of charging the dust with electricity, what will be the effect of an electric charge upon an infinitesimal rain-drop, if such a thing for a moment existed? The result is to check its evaporation. The rapid evaporation of a small drop is due to the curvature of its surface and its surface tension; an

electric charge tends virtually to diminish this, it tends to cause a slight surface pressure or distending force. A charged soap-bubble, for instance, is a trifle bigger than an uncharged one; the two effects of surface tension and electric tension are opposite. Not exactly opposite, for one is tangential and the other is radial; but whereas the tangential tension, on a convex surface like that of a liquid drop, has a resultant inwards, the electric tension ($2\pi\sigma^2$) acts wholly outwards. The surface or cohesive tension of a liquid is an intense force, and even its radial component is moderately big, especially for small drops. The tension caused by a given electric charge is usually a small force, but it increases very rapidly as the body possessing the charge gets smaller. The effect of the cohesive tension varies inversely as the simple diameter of the drop. The effect of the electric tension varies inversely as the fourth power of the diameter of the drop. Hence as the drop shrinks, the two opposing tendencies necessarily become equal when it reaches a certain minute size, and then the effect of its curvature is obliterated; it behaves as if flat. Such a drop can as easily exist as any liquid with a flat surface can; and any drop smaller than that would rapidly or even suddenly grow to this equilibrium size.

The moral of all this is that no solid nucleus is after all *essential*; an electric charge will do as well. No matter how small such a charge may be it will do something; even the charge on a single atom will suffice. Hence it follows that charged atoms or ions will serve as nuclei for the condensation of vapor and the formation of mist.

It is not the atom itself that acts as a nucleus, but its charge; the atom, for such a purpose, must be regarded as infinitesimal; any perceptible, or barely perceptible, dust particle must consist of billions of atoms. A single grain of lycopodium dust contains just about a trillion, (that is a million million million). Hence, since the atom is not needed, a corpuscle will do, or even an electron,—the hypothetical detached charge alone. The ionic charge, in

other words, on whatever it is carried, will serve as a nucleus for the condensation of vapor. It will serve even better on a corpuscle than on an atom, because it is geometrically smaller,—more concentrated,—and therefore the density and the tension of the charge at its surface are higher. If its volume is one thousandth of an atom, its diameter will be one tenth, and its electric tension ten thousand times as great as the tension of an atom or ion. It acts therefore as a powerful nucleus, and if the cathode or Lenard rays are directed on an atmosphere containing water-vapor nearly saturated, some of it at once condenses and you get a fog.

Myriads of mist-globules, too small to be individually seen, are the result of supplying what we have further on called atomic fragments, corpuscles, or electrons, to clear, moist, perfectly dust-free air.

If dust is present too, so that there is already some ordinary condensation, then the addition of the charged corpuscles adds to it greatly and makes the mist much thicker. Instead of a white or light gray color it takes on a deep brown or slaty appearance,—it puts on the aspect of a thunder cloud. The experiment is easily shown by taking sparks in or near a steam jet, and looking either at the jet or at its shadow. Undoubtedly this electric condensation, superposed upon ordinary dust-nucleus condensation, is the cause of the dense and angry looking appearance of a thunder cloud.

Thus, then, we see that if we introduce cathode rays, of known aggregate energy or known aggregate electric charge, into a vessel containing dust-free, damp air, a precipitation of myriads of mist-globules instantly occurs. How many mist-globules? Just as many as there are nuclei; one mist-globule for every corpuscle, and no more. Hence, count the mist-globules and you count the corpuscles.

Many years ago, in a lecture on "Dust" to the British Association at Montreal, 1884 ("Nature," vol. 31. p. 265), I suggested that this formation of mist might furnish Lord Kelvin with another

mode of measuring the divisibility of matter, with another estimate of the size of the atom; the idea being to weigh the total amount of solid evaporated from a bit of platinum wire, and to count the mist-globules thereby permitted to exist. The nuclei so obtained are exceedingly and surprisingly numerous but they could only give an upper limit, and probably a high upper limit, to the size of the smallest material particle; provided, as is probable, that in this case there was no dissociation or splitting up of atoms and no electric charges to complicate the effect. But if the experiment was made on electrically caused condensation (a variety of condensation of which no one at that time knew anything) nothing ordinarily thought of as matter would be present at all, and the limit of size so obtained might turn out decidedly too low for atomic magnitude.

But how are we to count the mist-globules? It is hopeless to try to see them individually and count them that way. It must be done indirectly. J. J. Thomson proceeded first to weigh the cloud, and then to estimate the size of its constituent spherules. Given the individual size of the liquid spheres, and given the aggregate weight of the water contained in them, the calculation of their number is only a question of simple arithmetic. Weigh the cloud! It is a delicate operation, but it is a straightforward laboratory operation performed with a balance.

Estimate the size of each globule,—they are all practically the same size,—how is that to be done? Here we invoke the aid of some hydrodynamical, mathematical researches of Sir George Stokes, half a century or so ago, concerning the motion of spheres through a resisting fluid. Consider a mist-drop or rain-drop falling through air; it is obeying the first law of motion; it is moving with steady speed under the action of no force,—just like a railway train or a ship after it has got well started. No force, that is no unbalanced force, is acting upon it. The earth is pulling it down, and air-friction is retarding its fall; the weight and the resistance balance; and the conditions of balance determine

its speed,—determine the rate at which it drops. But plainly its rate of fall depends on its size. If it gets bigger it weighs a good deal more and it is resisted only a little more; hence, in order again to attain equilibrium, it must move faster. On the other hand if it gets smaller it will go slower, so that still the diminished weight and the diminished resistance may balance each other. All this is obvious. What Stokes calculated, among many other things, was the exact dependence of speed on size, for a water-sphere falling through air. Given its size he could reckon its speed. Given its speed he could reckon its size. All that J. J. Thomson had to do then, after he had his cloud formed in dust-free air and weighed it, was to watch its rate of sinking. Such a mist, indeed any mist, formed in a bell-jar, is soon observed to be sinking or settling down; a clear space appears at the top, and if it is left quiet for half an hour or so, the whole space will have become clear by reason of the gravitative subsidence of the drops. It is just like powder or fine sand shaken up in water and left to settle. If the particles are of different sizes, the coarser ones will settle first, and we have the sorting process known as levigation. If they are all the same size, a clear space will appear at the top, and the rate of settling can be observed by watching the movement of the lower boundary of this clear space,—by timing the rate of subsidence of the top of the cloud.

Thus, then, the globules and the corpuscles are counted. Their aggregate mass and aggregate charge were already determined; and so their individual mass and their individual charge becomes known.

And now what is the net result and outcome of all these measurements? The result is that the charge belonging to each corpuscle is the usual ionic charge, familiar in electrolysis; but the mass of each is not the mass of an atom at all, it is a much smaller mass,—about the five hundredth part of an atom of hydrogen. The corpuscles are not atoms, they seem more like fragments of atoms; or else isolated electric charges and not

(in any other sense) material at all. They appear to have just the mass and charge of those things whose vibrations are observed in the radiation phenomenon of Zeeman; the things whose orbital motions and vibrations emit light. Moreover the same corpuscles are obtained, whatever may be the composition of the residual gas in the vacuum tube.

All this applies to the case of the *negatively* charged bodies which constitute the Cathode rays; it is not so easy to isolate and examine a body charged with the unit of positive ionic charge; but I believe that J. J. Thomson is doing or has done this also, and finds that though the charge is the same, the mass is very much greater, being in fact approximately equal to the whole atom. It is probably a trifle less, or it might be a trifle more; it can hardly be exactly the same as the mass of an uncharged atom, because one fragment, a single negative corpuscle is missing, or else it contains a single positive corpuscle extra; but the latter alternative is not so probable. The act of charging an atom positively seems to be identical with removing a minute fraction of its mass. A negatively charged atom will probably be found to have an atomic weight in slight excess of the normal value. But none of this has been directly verified as yet, because it is not possible at present to make these measurements within an accuracy of one part in five hundred, or with anything like that accuracy. Moreover, directly we use the term "weight," we are confronted with the fact that not yet have we any real clue to that astonishing fact of universal gravitation. *Cohesion* might conceivably turn out to be due to a sort of polarization or facing round of the adjacent layers of corpuscles in a pair of atoms; but why two neutral atoms attract each other *at a distance*, and whether two isolated, distant corpuscles attract each other with any residual force above and beyond that due to their electric charges, I, at least, am at present wholly ignorant.

We will return to the result of the vacuum tube investigations. Clerk Maxwell gave it as his opinion that a fruitful avenue to

discovery lay in a study of the phenomena accompanying electric discharge in gases; and since that *dictum* a splendid series of investigations, by Crookes and Schuster and J. J. Thomson in this country, not to mention others¹; have culminated in the present surprising discovery. The discovery that the atom is not simple but compound; that it is composed of a great number, say a thousand, of similar parts; that these parts can be isolated and dealt with, if not individually, yet separately from the rest of the atom; that each fragment or corpuscle is electrically charged, charged with the ionic charge, charged with Helmholtz's indivisible unit or atom of electricity, the very same charge that we have so long been familiar with in electrolysis;—the very same charge, but by no means the same quantity of matter. The matter associated with it and carrying it, or carried by it, is not an atom but a corpuscle, a fragment, one of the foundation stones of which the atoms are built up; the same identical fragment experimented upon by Zeeman and whose vibrations cause the emission of light.

Foundation stones of which the atoms are built up; does that mean all atoms, atoms of every kind? Are they the *same* corpuscles that go to the making of every kind of atom, are all the chemical elements built of the same identical corpuscles; only the grouping, the arrangement and the number of them being different? Why not? So points the evidence. The very same cathode rays are found whatever be the nature of the gaseous residue left in the vacuum tube. The fragments or corpuscles do not differ.

Here is Prout's hypothesis come to life again with a ven-

(1) But here a great number of others that *ought* to be mentioned: Righi of Bologna and Elster and Geissler of Wolfenbüttel (helped in their researches by American funds; the Elizabeth Thompson science fund (hurrah), and Becquerel and Curie of Paris, and Michelson of Chicago, and many others;—and a quantity of work on an entirely cognate and confirmatory subject,—the discharge of negative electricity from surfaces by means of ultra violet light,—a subject which space alone forbids my dealing with as its importance deserves. This essay does not aim at being encyclopædic.

geance! All atomic weights multiples of hydrogen? Not so,—but multiples of something, multiples of the weight of a corpuscle.

Given the corpuscles, some charged positively and some negatively, all otherwise exactly alike, and all with precisely the same numerical amount of charge, and you can build up the elements. Take five hundred of them, let us say, two hundred and fifty of them from each set, arrange them in some unknown grouping, and they will form an atom of hydrogen. Take sixteen times, or rather fifteen and eight tenths times as many, and you may arrange an atom of oxygen; possibly they will themselves naturally fall into the correct grouping if you provide the right number of them. Probably the grouping of numbers slightly different from these are not so stable, not so likely to be permanent.

We are now too much in the region of hypothesis, but when in sight of a unification of matter such as this, a unification that has always dangled itself before the eyes of philosophers, a trifle of hypothesis beyond the bounds of experiment and calculation may for a moment be pardoned.

But we will leave this region now, and returning to our atom of hydrogen with its five hundred or so similar corpuscles, remove one of them, remove one of the negative variety; what have we left? We have left a positively charged monad atom of hydrogen; a hydrogen ion. An atom charged with the ionic charge, and amenable to electrolysis.

What shall we do with the removed corpuscle? It can be given up to another atom, which will then become negatively charged, unless it promptly hands on another or the same corpuscle to a neighboring atom; which it may or may not be able to do. If it is able to effect that transfer, then the body to which it belongs is a metallic conductor.

For some reason, unknown at present, it is the negative corpuscles which are the mobile ingredient, the mounted infantry as it were of the corps; a positively charged atom appears to be

positively charged not by accretion of negative corpuscles so much as by difference, by loss of negative corpuscles. It has indeed then at least one unbalanced positive corpuscle to the good, and by means of its electrical attractions the whole atom can be sluggishly dragged about, but it does not show the mobility of the equally charged but far less encumbered, free, negative corpuscle. Not likely to, when it has five hundred times the mass, and only experiences the same force. Isolated *positive* corpuscles are not yet known; positive charges appear always associated with atoms of matter, but most of the activity and the excessive rapidity of electrical actions appears due to the high charge and small inertia of the negative corpuscle.

But why do these corpuscles, at least when free, possess an electric charge, and always the same electric charge? Can they be discharged? Have they anything to leave behind if they were discharged? How much of them is electric charge and how much material substance? Is there any material substance at all? Are they anything at all but electric charges?

An electric charge, we saw near the beginning of this article, possesses inertia; a corpuscle too possesses inertia; is its inertia partly electric and partly material; part due to its substance and part due to its charge? Electrical inertia we understand; in the light of electro-magnetic law it is inevitable; but what is material inertia? Is there such a thing? Are the corpuscles after all nothing but electrons? Have they any material body or substratum at all? These are questions which have not yet received an answer. The inertia of an electron, that is of (say a spherical) electric charge, depends upon its size,—its geometrical size,—the diameter of the sphere so to speak. The smaller its size the more concentrated will be the electric field near it, and the greater will be its inertia for a given quantity of charge. Make it small enough and it may have any inertia you like. Group such electrons into an atom, and the atom will have the inertia appropriate to their number. Now the inertia of an atom

is known, and the inertia of a corpuscle is known ; but the size of a corpuscle is not known. It is certainly small, but is it small enough to account for the whole of its inertia, or must a residue of material substratum be permitted ?

Is all matter resolvable into an aggregate of electric charges of opposite sign ? And does the explanation of the material universe consist in finding an answer to the question, what is an electric charge ? I fancy that Dr. J. Larmor, of St. John's College, Cambridge, England, would answer, "probably yes."

Near the beginning of this paper I set down some questions which I said were capable, or becoming capable, of being answered ; and now near the end I have set down some questions which are not yet capable of being answered. Nevertheless there are men in England, at any rate men in the world, capable of answering them ; and without further specification I believe that I have mentioned the names of most of them directly or indirectly in the course of this paper ; probably, nay certainly, with omissions however. But such men, if any in authority know them, should not be allowed to waste their time in looking over examination papers, or in tutoring even able undergraduates ; the true value of their possible service should be recognized, they should not have to seek enlistment in vain, they should be utilized by an enlightened nation and set to their own proper and appointed work.

In conclusion it is not to be supposed that I have here presented an epitome of all the evidence that can be adduced in favor of a certain view of the constitution of matter. The ideas have not come upon physicists suddenly ; the ground has been prepared by many indirect hints and suggestions,—the discharge of negative electricity by light being among them. And there is other evidence not mentioned here. The facts that originally suggested the idea of an electron, for instance, have hardly been referred to ; the evidence derived from spectroscopy and a study of stellar spectra has not been so much as hinted at ; only the most

salient and strongest features of the edifice have been represented, and it must suffice to say that there is other evidence,—some appealing more to chemists, some to astronomers, some to mathematicians,—some in favor of, and some against, such theses as the composite structure of the atom, the building up of the elements, the unification of matter, and the possible unification of matter and electricity.



THE NEED OF STATE ENDOWMENT FOR THE ADVANCEMENT OF MEDICAL SCIENCE

D. B. ST. JOHN ROOSA, M. D., LL. D., *New York.*



THE history of medical teaching in the United States has many peculiar features. It is distinguished by the fact that medical colleges in our country have been, as a rule, founded and carried on, not by trustees or governors, but by physicians and surgeons who were at the same time the teachers in the institution they founded. The beginning of medical teaching in New York State was, probably, in the New York Hospital. It was the thoughtless exposure by a medical student of a human bone from the window of that institution in 1780, which precipitated the doctors' mob, and made medical colleges very unpopular in New York. It is strange that until very lately people at large, as well as legislative bodies, have put every hindrance possible in the way of proper instruction in human anatomy. In Edinburgh, less than a century ago, this want of anatomical material was the cause of the celebrated murders perpetrated there by men who simply desired to get the money for subjects for dissection to be furnished to the university authorities. In the state of New York, it was not until the year 1854, that Professor Martyn Paine, one of the teachers in the newly founded Medical Department of the University, secured a law by which dissection was made legal. The Board of Councilmen of the city of New York presented a printed protest to the passage of the law, in which they

urged their representatives to oppose by every means, a bill legalizing dissection of dead bodies. Before that all dissection of human bodies was entirely contrary to law, with the possible exception of the bodies of a few executed criminals which were turned over to the doctors. Until that time, a person caught in the act was liable to be sent to state prison. The inconsistencies of legislation compelled a physician to be qualified to practice medicine, and then forbade him the means for becoming so.

The public in our country until very lately have taken no interest whatever in medical education, except in opposition to it. Hospitals, it is true, were established, and medical education was tolerated in many of them, but it was openly encouraged by the managers of but very few. There seems to have been an idea in the minds of even educated people, that medicine and surgery were hardly sciences, that a knowledge of their principles and practice was either inherited by a seventh son of a seventh son, or it was a gift from some miraculous source. The idea that doctors require a thorough training, and that the doctors who carry on this training should have every facility afforded them for doing so and be paid for it, has only very lately been understood by the average layman. There are many reasons on the surface for this. One is, that the study of medicine is regarded, and perhaps properly, as an uncanny occupation associated with skeletons, resurrectionists, and dissecting rooms, of which respectable people should know as little as possible. Then again, the doctors who have been eager to teach medicine have yielded easily to this general feeling, and have usually attempted to found their own colleges and carry them on without securing anything but nominal aid. And it must be admitted even by the enthusiastic devotees at the shrine of Aesculapius, that medicine only began to be an exact science about two hundred and fifty years ago when Harvey discovered the circulation of the blood, so that the profession was really late in getting into the position which law and theology have held for centuries.

As has just been said, medical teaching in New York made a

stormy beginning in 1780 through the efforts of Dr. Bailey, in King's College, which subsequently became Columbia College. The Medical School was an integral part of the College until 1804, then, for some reason or other, perhaps because of the indifference of the college authorities to medical education, or because of the desire to control its own affairs, the College of Physicians and Surgeons was formed entirely independent of Columbia College. A nominal union was effected in 1811, but it was not until 1888 that the final union of the medical with the other faculties in Columbia University, was constituted under the presidency of Dr. Seth Low. Until the year last mentioned the College of Physicians and Surgeons in New York, was a private stock company organized for the teaching of medicine and returning dividends, more or less large, according to the number of students attending. This was also the case with the Medical Department of the University, until within the last two or three years. The same may be said of the Albany Medical College and the Buffalo Medical College, but we believe the Medical Department of Syracuse University was actually under the control of the trustees from its foundation, and that it never was a stock company like the other medical colleges.

This kind of medical school was established, not because the founders,—physicians and surgeons,—preferred it, but because if they did not have this kind of a medical college, there would have been none at all. This same state of things existed in almost all other states, but there were some exceptions. The Medical Department of Harvard University did not come under the control of the trustees of that institution until President Eliot's time. Most of the medical colleges in the various states of the Union were, as to their relations to boards of trustees, such as I have indicated.

The Medical Department of the University of Virginia has always been one of the exceptional institutions where the faculty of medicine was on the same footing as the other faculties, that

is, closely connected with the governing body. But for many years this institution was also exceptional, in that it taught only the theory of the practice of medicine, with no practical or clinical teaching.

It is very easy to criticise this condition of things, as has been done lately by the president of a great university in this country, and to speak of the early medical colleges as business ventures. But although it is true that most of them were such, yet they were commercial undertakings prompted by the highest motives and by the desire on the part of learned and successful men to establish means of instruction in a science and art of which they were exponents. In no proper sense, can these colleges be compared with an ordinary business venture, such as is involved in the establishment of dry goods and grocery stores. They are even a shade higher than the commercial endeavors which dot the ocean with steamers and which organize expeditions for finding the North Pole. As a rule, those who engaged in them did not hope to secure for themselves any more remuneration for their services, than would constitute a bare living. Their chief ambition was to acquire a justly deserved reputation and renown for knowledge and skill arising from the lessening of human suffering. Some of these men were so eager as teachers, that every consideration seemed to have been lost to them, except that of imparting knowledge and relieving human distress. The names of the founders of medical colleges in this country, of this character, form a list of philanthropists of the highest rank. Colleges were multiplied. Some of their founders were not actuated by the spirit which pervaded the minds of those who established medical colleges in the early days of the Republic. But the inevitable time came in the workings of private medical colleges, when the profession and the public could no longer endure them, because so many abuses were possible, and so many limitations certain. Then the demands on the teachers of medicine, as medicine expanded into the great science and art which it now is, became

so great that it was utterly impossible for a college not under the protection and care of a great university, to do its work so as to at all compare with that done in France and Germany, where the medical colleges have always been an integral part of public education.

Gradually in the state of New York, all the colleges have been freed from any suspicion of being stock companies. The professors are salaried officers quite independent of the number of students, as in the other departments of the universities. The gain to the science of medicine by this plan, has been enormous. Teachers would have been a little more than human if they had not sometimes shut their eyes to the hordes of young men, imperfectly prepared, coming to the study of medicine, when they knew that these great numbers meant a very large increase to their very meagre fees. The scientific improvements in the state of New York, were, no doubt, precipitated by the passage of a law which took away from the colleges the right to grant licences to practice medicine. Since every student was obliged to pass a state examination before he could legally practice medicine, no matter if he had the degree of M. D., it became necessary to make very strict requirements in the medical colleges, and this, of course, temporarily diminished the size of the classes. When the college could no longer be managed by the professors at a profit, they naturally accepted the invitation of councils and trustees, that they should become parts of the university in fact as well as in name.

This is all one step forward, but I propose to argue that the universities and colleges which now have the complete control of the medical teaching, can not from their own funds or from private gifts, properly equip them. In the earlier days, when medicine was in a more primitive condition than now, so much money for its proper teaching was not necessary. The old-fashioned medical teaching took place in a building with a good anatomical room for dissections, and with a moderately well equipped chemical and physiological laboratory. But not much

money was needed for either of them. Then the teaching of medicine proper, in the very early days did not even involve the study of clinical cases. Few colleges seem to have thought this was necessary, since they could send their students to visit the hospitals in the spare hours of noon. Professors delivered lectures on their experiences or from what they had derived from their reading and the young men took notes. When the lecturer had a strong personality the lectures contained much that was to say the least, if not original, tinctured with original notions and a healthy skepticism as to the truth of all that was to be found in the textbooks. But, in many instances, they were but a rehash of treatises that were at every student's elbow. The science of medicine was then contained in books and in the minds of those who had seen a large numbers of cases, but in New York until about forty years ago no stress was laid on seeing the cases, or in what is known as clinical teaching. As soon as medicine and surgery commenced to be taught from the patient, and in his presence, additional money was required, because room was needed to treat these patients. In other words, a dispensary and hospital became a part of each college.

Now, each medical college that has any claim to superior character has a large dispensary and is connected with a hospital, and the funds at the disposal of the faculties are generally sufficient for even this great enlargement of their work. These funds are well eked out by the contributions of the public who are always interested in individual patients in hospitals, although they still seem to take no interest in the education of the doctors who are to take the places of those now attending them and their families. We may say in passing, that there is yet in some colleges too much mere lecturing and too little demonstration over patients, but this difficulty has been in a great measure overcome.

In London, the medical schools have been associated with hospitals from the very earliest period. When I say "earliest

period," I mean for two centuries. Each important hospital has had a medical school attached to it, and in some respects, to which I shall allude later on, this has been an unfortunate arrangement for England. The division of the medical centres into so many parts has weakened the influence of London, since none of these great hospitals with medical schools attached, could well compare with the great hospitals and clinics in Vienna, Berlin, and Paris where there has always been concentration instead of division of medical influence. Besides this, the English mind seems to be rather inclined against state aid for medical institutions. Most, if not all, of these hospitals are private. The *Times* contains daily appeals for their support in the regular advertising columns. Of late, the so-called "Prince of Wales Fund for Hospitals" has stimulated private charity for the support of hospitals, but still cries for help are everywhere heard. England is behind the Continent in original research in medical science, chiefly because of the neglect of the state to provide the money, and the division of medical influence into so many parts. But the medical schools of London for a long time were very far ahead of those in this country, for the simple reason that medicine here was chiefly taught in the lecture room, while there it was in the hospitals.

Since the time has come when a medical school cannot exist without a hospital, the time is also coming when the public at large will appreciate this. They have not known it before because the profession who ought to have taught them this did not know it. It is found that the educated public always follows authoritative and good leadership in scientific, as well as in other educational matters and in political affairs.

In this country no systematic and concerted attempt has been made to lead the public in purely medical affairs, except in isolated and exceptional places. To an absurd degree, the medical profession declined to assume their rightful position as leaders in hygiene and medical matters. It is only during the present

generation, that we have had a board of health in New York City.

Some of the physicians of the olden time and a few of their legitimate descendants of our own day, have carefully concealed their opinions on medical matters of importance to the public, thinking it unprofessional to have their names and opinions in a magazine or journal intended for laymen. It is this neglect to take our appropriate place as educators and leaders of the public that has lead to such a luxurious growth of various forms and phases of quackery in this new land. There is probably less popular respect for the medical profession, as such, among the educated classes of this country than in any other that is fully civilized. But nowhere in the world does the medical profession obtain greater respect and loyalty, than among the poor laboring people who comprise the tenement-house population of our large cities. The services of physicians and surgeons in dispensaries and hospitals have taught the poor, that the science and art of medicine is of inestimable value to themselves and to their families. It is among the educated and even cultured people that faith-cures and mind-healers have their chief votaries. And it is because these people have not been lead by authoritative teaching, that so many of them have concluded that medicine is not a science in the usual adaptation of the term. They regard the hospitals as places where the poor may have medical attendance and a certain degree of comfort, but they themselves, to an extent that is startling, in all chronic ailments turn to the personal powers of some individual who has what is called medical talent, or who has downright delusions. With them the art of healing is a gift from God or the Evil One.

While, as yet, the community at large and our legislatures do not comprehend the great change that has occurred in the requirements of a plant for medical teaching, the medical profession is fully aware of it. The simple, old-fashioned medical school, in the broad sense of the word, with no hospital and no laboratory,

has passed away. The hospital is an expense that is more or less well borne by private aid, but the laboratory involves an outlay that professional fees and private gifts cannot cover.

We have learned that the laboratory is as important to the medical school as the hospital. We now know that it is to that source that we must look for the positive diagnosis of many forms of disease. We must also look there for the means of cure as deduced by experiments on animals and in a chemical way. It is impossible to secure laboratory work without a large expenditure of money for even the laboratory work necessary to do the teaching which is required for the college itself, but when we come to consider the subject of original investigation, upon which the whole future of medicine depends, the amount of money needed is greatly increased. From the natural inclination of those who have money to give it for classical, mathematical, astronomical, or geographical education, or for poor patients in the hospitals, it is almost impossible to secure any additional funds for laboratory work, and here the state should come in.

The state of New York provides very liberally for idiots, for blind people, for criminals and the insane, and for elementary education, and even for the study of natural history, so-called. But it does next to nothing for university training, and nothing at all, it may be said, for that part of the university training comprehended by the term medicine. It is quite possible that had not conditions changed very much, and laboratory investigations come to the fore, private contributions would have been sufficient to meet the wants even of medical schools, since clinics and hospitals are not very expensive. But laboratories are expensive and appeal to no one's sympathy. There have been two laboratories endowed in New York City by private individuals, and they have been of the greatest service, but, at least six or eight more are needed before this city and the rest of the state do their duty in this respect. A notable example is that in Vermont, where a fund is

appropriated to be used by the university of the state for medical, as well as agricultural and microscopic examinations.

In a report of one of the medical colleges of this city, the Chief of the Laboratory, Dr. Henry T. Brooks, has made an argument indicating the importance of the laboratory, which has suggested much that I am about to say. A large part of the successful work among patients is due to the investigations in the laboratories. They have brought the practice of medicine much nearer to an exact science, and, in consequence, using Dr. Brooks' words, "the average period of sickness is being shortened and the extension of disease limited." Examples of this are shown in the fact that in obscure cases of fever, the microscope, by an examination of blood, will distinguish between malarial and typhoid fever, puerperal and other fevers. This is also markedly true in the doubtful affections of the throat where a diagnosis by the microscope is made between diphtheria, a dread disease very largely fatal, and tonsilitis, or quinsy, from which people always recover. Then again, the beginning of pulmonary consumption can very often be determined in the laboratory. It certainly can not be positively decided upon without the microscope. The whole community is now familiar with what may be made known by chemical analysis of the urine in the laboratory, of the existence or non-existence of diabetes by the detection or non-detection of sugar, and so of albumin and casts in Bright's Disease, which comprehends many things. There are diseases of the kidneys which can only be recognized by the microscope, and later investigations even tell the physician of certain intestinal disorders which deserve serious consideration. The kind of anaesthetic that can safely be used in a certain operation can often be determined by a microscopical examination of the patient's excretions. As to the great subject of tumors, every one knows that the benign and malignant character of tumors can only be positively determined in the laboratory.

Men sufficiently competent to make these examinations

must be highly trained by long experience. They acquire no remunerative practice from their experience, hence, they cannot be paid as hospital physicians and surgeons are supposed to be paid, by the fees received from wealthy patients who are attracted to the consulting rooms and private wards of those physicians and surgeons by the renown they have gained from treating the poor, a renown which has been promulgated from maid to mistress and from man servant to master. Besides large salaries, money must be provided for expensive apparatus; indeed, the plant of the laboratory is of the most expensive order. If we add to all these things that are necessary for the present needs of every day teaching and practice in the laboratory, besides the requirements for original investigations, we may understand what a boundless field of inquiry opens before us.

There are two kinds of laboratories required. One, such as that in the Pasteur Institute in Paris and the Koch Laboratory in Berlin. The other, is a laboratory for physiological investigation, such as that of the late Professor Helmholtz in Berlin, and Professor Ludwig in Leipsic. It would be impossible to overestimate the value of such laboratories to the human race. Although it is not certain that a cure for hydrophobia has been discovered by Pasteur, and certainly none for tuberculosis by Koch, they have both accomplished much, and it is by errors in the beginning that truth is finally discovered. "If a man makes no mistakes, he will never make anything." This is as true in science as in statesmanship or war. The work in these laboratories has been enormous and fruitful. The outcome of these investigations has placed Germany and France far in the front rank in medical science. When we remember that America produced the sewing machine, the grain reaper, the electric telegraph, the telephone and the steamboat, as well as the electric lighting of houses and streets, we can realize what the American mind would accomplish were laboratories sustained by the state as they are in France and Germany. It is marvelous that the American physicians

have held their own so well in clinical medicine and surgery when compared with their European compeers, who have had every resource provided. The Americans have been making bricks without straw. If they had the proper means at their disposal they would take their full share in the investigation of disease and the saving of human life. I hold that the state ought to provide sufficient funds for the adequate and thorough instruction of all the pupils in every medical institution already legally authorized, and for such others as the increase of population may cause to be established under the regulation of the state. There are states where this has been done to some extent, as in Pennsylvania and Michigan. It is extraordinary that public clamor directed against the appropriation of public funds for so-called private corporations, has led the state of New York to neglect the fields of scientific labor that need irrigation in order that they may be properly and successfully cultivated, as much as do the high table lands of Colorado and Arizona. What, in the great West, is accomplished by such care for agricultural products, would be fully equalled in results for the benefit of suffering humanity by the endowment of medical schools. Besides the laboratories in connection with the colleges which are successful for teaching purposes, there should be provision for investigation where there will be no teaching, strictly speaking, but where investigation having culminated in a discovery may be given to the whole professional world, and through that, to the public. The Röntgen rays, for the diagnosis of conditions of the human body from malady and injury hitherto beyond our sight, might have been discovered in America, as well as Germany, if we had had the governmental aid there so freely afforded.

Quackery has done and is doing great harm to our race, but it can never be driven from the earth except by exact knowledge. Until medicine has become an exact science in all its departments we may not expect its disappearance. Each great medical discovery, like that of the value of vaccination for the prevention of small-

pox, the influence of filth in the prevention of healing of wounds and the discovery of specific germs in the causation of disease Röntgen rays, and the ophthalmoscope by which the interior of the eye can be seen in all its beautiful detail, all of these have given charlatanry a staggering blow. More such blows will follow when the state steps in to provide for original investigations in hospitals and laboratories. What has been accomplished by scientists across the sea, is only infinitesimal as compared with that which awaits the world, if only a complete opportunity is given here as well as there.



ASTRONOMICAL PHOTOGRAPHY

HAROLD JACOBY, *Columbia University.*



HE masterful efforts of genius, working single-handed, have occasionally monumented new highways of science; but more often it is slow-moving time that ripens discovery, and, at the proper moment, opens some new path to men whose intellectual power is but willingness to learn. So the annals of astronomical photography do not recount the achievements of extraordinary genius. It would have been strange indeed if the discovery of photography had not been followed by its application to astronomy.

The whole range of chemical science contains no experiment of greater inherent interest than the development of a photographic plate. Let but the smallest ray of light fall upon its strangely sensitive surface, and some subtle invisible change takes place. It is then merely necessary to plunge the plate into a properly prepared chemical bath, and the gradual process of developing the picture begins. Slowly, very slowly, the colorless surface darkens wherever light has touched it. Let us imagine that the exposure has been made with an ordinary lens and camera, and that it is a landscape seeming to grow beneath the experimenter's eyes. At first only the most conspicuous objects make their appearance. But gradually the process extends, until finally every tiny detail is reproduced with marvelous fidelity to the

original. The photographic plate, when developed in this way, is called a "negative." For in nature luminous points, or sources of light, are bright, while the developing negative turns dark wherever light has acted. Thus the negative, while true to nature, reproduces everything in a reversed way; bright things are dark, and shadows appear light. For ordinary purposes, therefore, the negative has to be replaced by a new photograph made by copying it again photographically. In this way it is again reversed, giving us a picture corresponding correctly to the facts of nature. Such a copy from a negative is what is ordinarily called a photograph; technically, it is known as a "positive."

One of the remarkable things about the sensitive plate is its complete indifference to the distance from which the light comes. It is ready to yield obediently to the ray of some distant star that may have journeyed, as it were, from the very vanishing point of space, or to the bright glow of an electric light upon the photographer's table. This quality makes its use especially advantageous in astronomy, since we can gain knowledge of remote stars only by a study of the light they send us. In such study the photographic plate possesses a supreme advantage over the human eye. If the conditions of weather and atmosphere are favorable, an observer looking through an ordinary telescope will see nearly as much at the first glance as he will ever see. Attentive and continued study will enable him to fix details upon his memory, and to record them by means of drawings and diagrams. Occasional moments of especially undisturbed atmospheric conditions will allow him to glimpse faint objects seldom visible. But on the whole, telescopic astronomers add little to their harvest by continued husbandry in the same field of stars. Photography is different. The effect of light upon the sensitive surface of the plate is strictly cumulative. If a given star can bring about a certain result when it has been allowed to act upon the plate for one minute, then in two

or three minutes it will accomplish much more. Perhaps a single minute's exposure would have produced a mark scarcely perceptible upon the developed negative. In that case, three or four minutes would give us a perfectly well defined black image of the star.

Thus by lengthening the exposure we can make the fainter stars impress themselves upon the plate. If their light is not able to produce the desired effect in minutes, we can let its action accumulate for hours. Thus in the end, it becomes possible and easy to photograph objects so faint that they have never been seen, even with the most powerful telescopes. This achievement ranks high among those which make astronomy appeal so strongly to the imagination. Scientific men are not given to fancies; nor should they be. But the first long exposure photograph must have been an exciting thing. After coming from the observatory, the chemical development was, of course, made in a dark room, so that no additional light might harm the plate until the process was complete. Carrying it out then into the light, that early experimenter cannot but have felt a thrill of triumph; for his hand held a true picture of dim stars to the eye unlighted, lifted into view as if by magic.

Plates have been thus exposed as long as twenty-five hours, and the manner of doing it is very interesting. Of course it is impossible to carry on the work continuously for so long a period, since the beginning of day-light would surely ruin the photograph. In fact, the astronomer must stop before even the faintest streak of dawn begins to redden the eastern sky. Moreover, making astronomical negatives requires excessively close attention, and this it is impossible to give continuously during more than a few hours. But the exposure of a single plate can be extended over several nights without difficulty. It is merely necessary to close the plate-holder with a "light-tight" cover, when the first night's work is finished. To begin further exposure of the same plate on another night, we simply aim

the photographic telescope at precisely the same point of the sky as before. The light-tight plate-holder being again opened, the exposure can go on as if there had been no interruption.

Astronomers have invented a most ingenious device for making sure that the telescope's aim can be brought back again to the same point with great exactness. This is a very important matter; for the slightest disturbance of the plate before the second or subsequent portions of the exposure, would ruin everything. Instead of a very complete single picture, we should have two partial ones mixed up together in inextricable confusion. To prevent this, photographic telescopes are made double, not altogether unlike an opera-glass. One of the tubes is arranged for photography proper, while the other is fitted with lenses suitable for an ordinary visual telescope. The two tubes are made parallel. Thus the astronomer, by looking through the visual glass, can watch objects in the heavens even while they are being photographed. The visual half of the instrument is provided with a pair of very fine cross-wires movable at will in the field of view. These can be made to bisect some little star exactly, before beginning the first night's work. Afterwards, everything about the instrument having been left unchanged, the astronomer can always assure himself of coming back to precisely the same point of the sky, by so adjusting the instrument that the same little star is again bisected.

It must not be supposed, however, that the entire instrument remains unmoved, even during the whole of a single night's exposure. For in that case, the apparent motion of the stars as they rise or set in the sky would speedily carry them out of the telescope's field of view. Consequently, this motion has to be counteracted by shifting the telescope so as to follow the stars. This can be accomplished accurately and automatically by means of clock-work mechanism. Such contrivances have already been applied in the past to visual telescopes, because even then they facilitated the observer's work. They save him the trouble of

turning his instrument every few minutes, and allow him to give his undivided attention to the actual business of observation. But for photographic purposes the telescope needs to "follow" the stars far more accurately than in the older kind of observing with the eye. Nor is it possible to make a clock that will drive the instrument satisfactorily and quite automatically. But by means of the second, or visual telescope, astronomers can always ascertain whether the clock is working correctly at any given moment. It requires only a glance at the little star bisected by the cross wires, and if there has been the slightest imperfection in the following by clock-work, the star will no longer be cut exactly by the wires.

The astronomer can at once correct any error by putting in operation a very ingenious mechanical device sometimes called a "mouse-control." He need only touch an electric button, and a signal is sent into the clock-work. Instantly there is a shifting of the mechanism. For one of the regular driving wheels is substituted, temporarily, another having an *extra tooth*. This makes the clock run a little faster so long as the electric current passes. In a similar way, by means of another button, the clock can be made to run slower temporarily. Thus by watching the cross wires continuously, and manipulating his two electric buttons, the photographic astronomer can compel his telescope to follow exactly the object under observation, and he can make certain of obtaining a perfect negative.

These long-exposure plates are intended especially for what may be called descriptive astronomy. With them, as we have seen, advantage is taken of cumulative light-effects on the sensitive plate, and the telescope's light-gathering and space-penetrating power thus vastly increased. We are enabled to carry our researches far beyond the confines of the old visible universe. Extremely faint objects can be recorded, even down to their minutest details, with a fidelity unknown to older methods. But in the present article we intend to consider prin-

cipally applications of photography in the astronomy of measurement, rather than the descriptive branch of our subject. Instead of describing pictures made simply to see what certain objects look like in the sky, we shall consider negatives intended for precise measurement, with all that the word precision implies in celestial science.

Taking up first the photography of stars, we must begin by calling attention to the work of Rutherfurd. More than thirty years ago he had so far perfected his methods of stellar photography that he was able to secure excellent pictures of stars as faint as the ninth magnitude. In those days the modern process of dry-plate photography had not been invented. Today, plates exposed in the photographic telescope are made of glass covered with a perfectly dry film of sensitized gelatine. But in the old wet-plate process the sensitive film was first wetted with a chemical solution; and this solution could not be allowed to dry during the exposure. Consequently, Rutherfurd was limited to exposures a few minutes in length, while nowadays, as we have said, their duration can be prolonged at will. When we add to this the fact that the old plates were far less sensitive to light than those now available, it is easy to see what were the difficulties in the way of photographing faint stars in Rutherfurd's time. Nor did he possess the modern ingenious device of a combined visual and photographic instrument. He had no electric controlling apparatus. In fact, the younger generation of astronomers can form no adequate idea of the patience and personal skill Rutherfurd must have had at his command. For he certainly did produce negatives that are but little inferior to the best that can be made today. His only limitation was that he could not obtain images of stars much below the ninth magnitude.

But he did not stop with the mere photographs. He realized very clearly the obvious truth that by making a picture of the sky we merely change the scene of our operations. Upon the photograph

we can measure that which we might have studied directly in the heavens ; but so long as they remain unmeasured, celestial pictures have a potential value only. Locked within them may lie hidden some secret of our universe. But it will not come forth unsought. Patient effort must precede discovery, in photography, as elsewhere in science. There is no royal road. Rutherford devised an elaborate measuring machine in which his photographs could be examined under the microscope with the most minute exactness. With this machine he measured a large number of his pictures ; and it has been shown quite recently that the results obtained from them are comparable in accuracy with those coming from the most highly accredited methods of direct eye observation. And the photographs are far superior in ease of manipulation. Convenient day observing under the microscope in a comfortable astronomical laboratory is substituted for all the discomforts of a midnight vigil under the stars. The work of measurement can proceed in all weathers, whereas formerly it was limited strictly to perfectly clear nights. Lastly, the negatives form a permanent record, to which we can always return to correct errors or reëxamine doubtful points.

Rutherford's stellar work extended down to about 1877, and included especially parallax determinations and the photography of star-clusters. Each of these subjects is receiving close attention from later investigators, and therefore merits brief mention here. Stellar parallax is in one sense but another name for stellar distance. Its measurement has been one of the important problems of astronomy for centuries ; ever since men recognized that the Copernican theory of our universe requires the determination of stellar distances for its complete demonstration. If the earth is swinging around the sun once a year in a mighty path or orbit, there must be changes of its position in space comparable in size with the orbit itself. And the stars ought to shift their apparent places on the sky to correspond with these changes in the terrestrial observer's position. The phenomenon is analogous

to what occurs when we look out of a room, first through one window, and then through another. Any object on the opposite side of the street will be seen in a changed direction, on account of the observer's having shifted his position from one window to the other. If the object seemed to be due north when seen from the first window, it will perhaps appear a little east of north from the other. But this change of direction will be comparatively small, if the object under observation is very far away, in comparison with the distance between the two windows. This is precisely what occurs with the stars. The earth's orbit, vast as it is, shrinks into almost absolute insignificance when compared with the profound distances by which we are sundered from even the nearest fixed stars. Consequently, the shifting of their positions is also very small,—so small as to be near the extreme limit separating that which is measurable from that which is beyond human ken.

Photography lends itself most readily to a study of this matter. Suppose a certain star is suspected of "having a parallax." In other words, we have reason to believe it near enough to admit of a successful measurement of distance. Perhaps it is a very bright star; and, other things being equal, it is probably fair to assume that brightness signifies nearness. And astronomers have certain other indications of proximity that guide them in the selection of proper objects for investigation, though such evidence of course never takes the place of actual measurement. The star under examination is sure to have near it on the sky a number of stars so very small that we may safely take them to be immeasurably far away. The parallax star is among them, but not of them. We see it projected upon the background of the heavens, though it may in reality be quite near us, astronomically speaking. If this is really so, and the star therefore subject to the slight parallactic shifting already mentioned, we can detect it by noting the suspected star's position among the surrounding small stars. For these being immeasurably remote will remain unchanged,

within the limits of our powers of observation ; and thus serve as points of reference for marking the apparent shifting of the brighter star we are actually considering. We have merely to photograph the region at various seasons of the year. Careful examination of the photographs under the microscope will then enable us to measure the slightest displacement of the parallax star. From these measures, by a process of calculation, astronomers can then obtain the star's distance. It will not become known in miles ; we shall only ascertain how many times the distance between the earth and sun would have to be laid down like a measuring rod, in order to cover the space separating us from the star.

We shall see further on that the subsequent evaluative of this distance "earth-sun" in miles is another important problem in whose solution photography promises to be most useful. The above method of measuring stellar distance is, of course, subject to whatever slight uncertainty arises from the assumption that the small stars used for comparison are themselves beyond the possibility of parallactic shifting. But astronomy possesses no better method. Moreover, the number of small stars used in this way is, of course, much larger in photography than it ever can be in visual work. In the former process, all surrounding stars can be photographed at once ; in the latter, each star must be measured separately, and daylight soon intervenes to impose a limit on numbers. Usually only two can be used ; so that here photography has a most important advantage. It minimizes the chance of our parallax being rendered erroneous, by the stars of comparison not being really infinitely remote. This might happen, perhaps, in the case of one or two ; but with an average result from a large number we know it to be practically impossible.

Cluster work is not altogether unlike "parallax hunting," in its preliminary stage of securing the photographic observations. The object is to obtain an absolutely faithful picture of a star group,

just as it exists in the sky. We have every reason to suppose that a very large number of stars condensed into one small spot upon the heavens means something more than chance aggregation. The Pleiades group, for instance, contains thousands of massive stars, doubtless held together by the force of their mutual gravitational attraction. If this be true, there must be complex orbital motion in the cluster; and, as time goes on, we should actually see the separate components change their relative positions, as it were, before our eyes. The details of such motion upon the great scale of cosmic space offer one of the many problems that make astronomy the grandest of sciences.

We have said that time must pass before we can see these things; there may be centuries of waiting. There is but one way to hurry on the perfection of our knowledge; we must increase the precision of observation. Motions that would need the growth of centuries to become visible to the older astronomical appliances, might yield in a few decades to more delicate observational processes. Here photography is most promising. Having once obtained a surpassingly accurate picture of a star-cluster, we can subject it easily to precise microscopic measurement. The same operations repeated at a later date will enable us to compare the two series of measures, and thus ascertain the motions that may have occurred in the interval. The Rutherford photographs furnish a veritable mine of information in researches of this kind; for they antedate all other celestial photographs of precision by at least a quarter-century, and bring just so much nearer the time when definite knowledge shall replace information based on reasoning from probabilities.

Rutherford's methods showed the advantages of photography as applied to individual star-clusters. It required only the attention of some astronomer disposing of large observational facilities, and accustomed to operations upon a great scale, to apply similar methods throughout the whole heavens. In the year 1882 a bright comet was very conspicuous in the southern heav-

ens. It was extensively observed from the southern hemisphere, and especially at the British Royal Observatory at the Cape of Good Hope. Gill, the director of that institution, conceived the idea that this comet might be bright enough to photograph. At that time, comet photography had been attempted but little, if at all, and it was by no means sure that the experiment would be successful. Nor was Gill well acquainted with the work of Rutherford; for the best results of that astronomer had lain dormant many years. He was one of those men with whom personal modesty amounts to a fault. Loth to put himself forward in any way, and disliking to rush into print, Rutherford had given but little publicity to his work. This peculiarity has doubtless delayed his just reputation; but it will lose nothing in the end from having been postponed. Gill must, however, be credited with more penetration than would be his due if Rutherford had made it possible for others to know that he had anticipated many of the newer ideas.

However this may be, the comet was photographed with the help of a local portrait photographer named Allis. When Gill and Allis fastened a simple portrait camera belonging to the latter upon the tube of one of the Cape telescopes, and pointed it at the great comet, they little thought the experiment would lead to one of the greatest astronomical works ever attempted by men. Yet this was destined to occur. The negative they obtained showed an excellent picture of the comet; but what was more important for the future of sidereal astronomy, it was also quite thickly dotted with little black points corresponding to stars. The extraordinary ease with which the whole heavens could be thus charted photographically was brought home to Gill as never before. It was this comet picture that interested him in the application of photography to star charting; and without his interest the now famous astro-photographic catalogue of the heavens would probably never have been made.

After considerable preliminary correspondence, a congress of

astronomers was finally called to meet at Paris in 1887. Representatives of the principal observatories and civilized governments were present. They decided that the end of the nineteenth century should see the making of a great catalogue of all the stars in the sky, upon a scale of completeness and precision surpassing anything previously attempted. It is impossible to exaggerate the importance of such a work; for upon our star catalogues depends ultimately the entire structure of astronomical science.

The work was far too vast for the powers of any observatory alone. Therefore the whole sky, from pole to pole, was divided into eighteen belts or zones of approximately equal area; and each of these was assigned to a single observatory to be photographed. A series of telescopes was specially constructed, so that every part of the work should be done with the same type of instrument. As far as possible, an attempt was made to secure uniformity of methods, and particularly a uniform scale of precision. To cover the entire sky upon the plan proposed no less than forty-four thousand one hundred and eight negatives are required; and most of these have now been finished. The further measurement of the pictures and the drawing up of a vast printed star catalogue are also well under way. One of the participating observatories, that at Potsdam, Germany, has just published the first volume of its part of the catalogue. It is estimated that this observatory alone will require twenty quarto volumes to contain merely the final results of its work on the catalogue. Altogether not less than two million stars will find a place in this, our latest directory of the heavens.

Such wholesale methods of attacking problems of observational astronomy are particularly characteristic of photography. The great catalogue is perhaps the best illustration of this tendency; but of scarcely smaller interest, though less important in reality, is the photographic method of dealing with minor planets. Our readers will remember that in the space between the orbits of Mars and Jupiter several hundred small bodies are moving around

the sun in ordinary planetary orbits. These bodies are called asteroids, or minor planets. The visual method of discovering unknown members of this group was painfully tedious; but photography has changed matters completely, and has added immensely to our knowledge of the asteroids. Wolf, of Heidelberg, was the first to make use of the new process for minor planet discovery. His method is sufficiently ingenious to deserve brief mention here. A photograph of a suitable region of the sky was made with an exposure lasting two or three hours. Throughout all this time the instrument was manipulated so as to follow the motion of the heavens in the way we have already explained, so that each star would appear on the negative as a small, round, black dot. But if a minor planet happened to be in the region covered by the plate, its photographic image would look very different. For the orbital motion of the planet about the sun would make it move a little among the stars even in the two or three hours during which the plate was exposed. This motion would be faithfully reproduced in the picture, so that the planet would appear as a short curved line rather than a well-defined dot like a star. Thus the presence of such a line-image infallibly denotes an asteroid. Subsequent calculations are necessary to ascertain whether the object is a planet already known or a genuine new discovery. Wolf, and others using his method in recent years, have made immense additions to our catalogue of asteroids. Indeed, the matter was beginning to lose interest on account of the frequency and sameness of these discoveries, when the astronomical world was startled by the finding of an individual planet of quite especial interest.

On August 27, 1897, Witt, of Berlin, discovered the small body that bears the number "433" in the list of minor planets, and has received the name Eros. Its important peculiarity consists in the exceptional position of the orbit. While all the other asteroids are further from the sun than Mars, and less distant than Jupiter, Eros can pass within the orbit of the

former. At times, therefore, it will approach our earth more closely than any other permanent member of the solar system, excepting our own moon. So it is, in a sense, our nearest neighbor; and this fact alone makes it the most interesting of all the minor planets. The beginning of our century was marked by Piazzi's well known discovery of the first of these bodies: it is therefore fitting that we should find the most important one at its close. We are almost certain that it will be possible to make use of Eros to solve with unprecedented accuracy the most important problem in all astronomy. This is the determination of our earth's distance from the sun. When considering stellar parallax, we have seen how our observations enable us to measure some of the stars' distances in terms of the distance "earth-sun" as a unit. It is, indeed, the fundamental unit for all astronomical measures, and its exact evaluation has always been considered the basal problem of astronomy. Astronomers know it as the problem of Solar Parallax.

We have not space to enter into the somewhat intricate details of this subject, however interesting they may be. The problem offers difficulties somewhat analogous to those confronting a surveyor who has to determine the distance of some inaccessible terrestrial point. To do this, it is necessary first to measure a "base-line," as we call it. Then the measurement of angles with a theodolite will make it possible to deduce the required distance of the inaccessible point by a process of calculation. To insure accuracy, however, as every surveyor knows, the base line must be made long enough; and this is precisely what is impossible in the case of the solar parallax. For we are necessarily limited to marking out our base-line on the earth; and the entire planet is too small to furnish one of really sufficient size. The best we can do is to use the distance between two observatories situated, as near as may be, on opposite sides of the earth. But even then the base is woefully small. However, this smallness loses some of its harmful effect if we operate upon a planet that

is comparatively near us. We can measure such a planet's distance more accurately than any other; and this being known, the solar distance can be computed by the aid of mathematical considerations based upon Newton's law of gravitation and observational determinations of the planetary orbital elements.

Photography is by no means limited to investigations in the older departments of astronomical observation. Its powerful arm has been stretched out to grasp as well the newer instruments of spectroscopic study. Here the sensitive plate has been substituted for the human eye with even greater relative advantage. The accurate microscopic measurement of difficult lines in stellar spectra was indeed possible by older methods; but photography has made it comparatively easy; and, above all, has rendered practicable series of observations extensive enough in numbers to furnish statistical information of real value. Only in this way have we been able to determine whether the stars, in their varied and unknown orbits, are approaching us or moving farther away. Even the speed of this approach or recession has become measurable, and has been evaluated in the case of many individual stars.

The subject of solar physics has become a veritable department of astronomy in the hands of photographic investigators. Ingenious spectro-photographic methods have been devised, whereby we have secured pictures of the sun from which we have learned much that must have remained forever unknown to older methods. Especially useful has photography proved itself in the observation of total solar eclipses. It is only when the sun's bright disc is completely obscured by the interposed moon that we can see the faintly luminous structure of the solar corona, that great appendage of our sun, whose exact nature is still unexplained. Only during the few minutes of total eclipse in each century can we look upon it; and keen is the interest of astronomers when those few minutes occur. But it is found that eye observations made in hurried excitement have comparatively little value. Half a dozen

persons might make drawings of the corona during the same eclipse, yet they would differ so much from one another as to leave the true outline very much in doubt. But with photography we can obtain a really correct picture whose details can be studied and discussed subsequently at leisure.

If we were asked to sum up in one word what photography has accomplished, we should say that observational astronomy has been revolutionized. There is today scarcely an instrument of precision in which the sensitive plate has not been substituted for the human eye; scarcely an inquiry possible to the older method which cannot now be undertaken upon a grander scale. Novel investigations formerly not even possible are now entirely practicable by photography; and the end is not yet. Valuable as are the achievements already consummated, photography is richest in its promise for the future. Astronomy has been called the "perfect science"; it is safe to predict that the next generation will wonder that the knowledge we have today should ever have received so proud a title.



SOCIAL CONDITIONS IN KENTUCKY

WILLIAM LINDSAY, *U. S. Senator from Kentucky.*



I am asked to respond to the inquiry, whether there is anything in the peculiar social character and conditions in Kentucky tending to explain the occurrences of the last few months in connection with, and growing out of the controversy over the result of, the late state election. The inquiry involves the assumption that those occurrences are not only unusual, but so extraordinary as to be practically without parallel in the history of the American States. If such be the case, we must look below the surface for the explanation, and investigate the habits and customs and the mental and moral characteristics of the Kentucky people, to determine how far, if at all, they may be predisposed to disregard the restraints of regular and orderly government.

Before considering the occurrences in question, and their compatibility or incompatibility with American history, it is necessary to give some attention to the making of Kentucky, the origin of its people, the sources from which its population has been drawn, and the influences, mental, moral and social, that have been at work during the century and a quarter in which a remote, unbroken and trackless wilderness has been converted into a prosperous state.

Separated from the inhabited portions of Virginia by two ranges of apparently impassable mountains, the Kentucky portion of the county of Fincastle was not an inviting field to the average settler, but it offered irresistible allurements to the hardy woodsmen, who, in pursuit of adventure, were ready to brave any danger or to endure any hardship. For a quarter of a century before the separation of Virginia from the mother commonwealth, those adventurers had been exciting the land-loving frontiersmen with their glowing accounts of the beauty and fertility of this distant region. In 1770 the tide of western emigration crossed the mountains and found its way through the Cumberland Gap and down the Ohio valley into this land of promise. In 1776 the population had so increased that the introduction of organized government was required, and to that end the county of Kentucky, embracing the entire area of the present state, was established by the Virginia Legislature and machinery provided for the due administration of law, civil and criminal.

On the first day of June, 1792, Kentucky dissolved her relations with Virginia and was admitted into the Union as a state. She was the second addition to the original thirteen, and the first state organized west of the Alleghanies. Her population was then approximately eighty thousand souls.

The rich lands that had attracted the adventurous people of the Atlantic coast stretched from the foot hills of the Cumberland mountains on the east, to the waters of the Mississippi on the west, and north from the then territory of Tennessee to the Ohio river. Daniel Boone was not the first explorer of this fertile country, but *was* the pioneer, whose example induced the coming of the first settlers who crossed the mountains and braved the wilderness with the purpose of making their homes in what was then "The Dark and Bloody Ground."

In 1775 those who, in fear of hostile Indians, had fled the year before from the first permanent collection of cabins returned

to their deserted homes, and Harrodsburg became a permanent settlement. In the same year Richard Henderson, with his company, established the town of Boonsboro, and, in conjunction with Boone and Floyd and their associates, set on foot the colony of Transylvania. In accordance with the fashion of those days, having first protested their loyalty to the crown of Great Britain, these colonists proceeded to established courts, to organize the militia, and to do those things which none but an independent state has ever assumed to do. It has not been recorded that King George the Third complained that the conduct of these liegemen was inconsistent with their loyal protestations, but Virginia asserted her supremacy over the Transylvania territory, and before the end of the year 1776 this embryo commonwealth disappeared as a geographical and political entity, and was merged into the county of Kentucky.

To the sturdy backwoodsmen the change was a matter of minor importance. The cares and responsibilities of government rested lightly on them, and so long as they were permitted to make war on their savage neighbors and to appropriate, at their own free will, the fertile lands around them, they were content to recognize the sovereign authority of a commonwealth, the seat of whose power was so far away that subordination to its laws was purely a matter of volition.

While in their rude way the backwoodsmen were laying the foundations of the new state, the news came across the mountains that the contest for American independence had begun, and that American blood had been shed on American soil by the soldiers of the king. The reports of the battle of Lexington were told around the camp-fire of a band of pioneers, and the proposal was made and agreed to, that the town they were beginning should take the name of Lexington, and thus, as has been said, "Far away from civilized life, in the heart of an unbroken forest, at the dead of night, a little band of adventurers, erected the *first*

monument ever erected on this continent in honor of the *first dead* of the Revolution."

The story of the defense of Kentucky against the incursion of hostile savages, it is unnecessary to recount. Boonsboro, Hinkston, Blue Licks and a score of lesser battles rendered the names of Logan, Boone, Kenton, Todd, Trigg and their compatriots historic.

In the language of an eminent Kentuckian, the pioneer women of Kentucky, "while their husbands fired from the loop-holes of the forts on the besieging enemy, * * * * melted the bullets with which their guns were loaded. They guarded the forts while the men were fighting the Indians or hunting the game. When death took the pioneer from his toils it was the women who wrapped him in his coarse shroud and laid him in his rough coffin and wetted his obscure grave with their tears". From men and women such as these the present civilization of Kentucky was inherited.

After the close of the War of the Revolution the influx of emigrants to Kentucky was mainly from Virginia, Maryland, North Carolina and Western Pennsylvania, the great mass being from Virginia. It consisted not of mere hunters and backwoodsmen, but of men seeking homes and lands on which to rear their families and which they expected to leave as an inheritance to their children. There came also another class composed of men of education and comparative wealth, who soon became prominent in public affairs, and led the way to that comfort and luxury which, at an early day distinguished Kentucky. Of these men it is said in "The Winning of the West":—

"They were of good blood, using the words as they should be used, as meaning blood that has flowed through the veins of generations of self-restraint and courage and hard work and careful training in the mind and in the manly virtues. The inheritance of sturdy and self-reliant manhood helped them greatly. Their blood told in their favor, as blood generally does tell when all other things are equal. If they prized intellect, they prized character

more. They were strong in body and mind, stout of heart, and resolute of will. They felt that pride of race which spurs a man to effort, instead of making him feel he is excused from effort. They realized that the qualities they inherited from their forefathers ought to be further developed by them, as their forefathers had originally developed them. They knew that their blood and breeding, though making it probable they would with proper effort succeed, yet entitled them to no success which they could not fairly earn in open contest with their rivals."

Class distinctions never took root in Kentucky. Breeding, cultivation and wealth had their advantages, but the absolute equality in personal and political rights at all times asserted by all men, confined superior personal importance to superior personal gifts, attainments and force.

An important addition to the early Kentucky population was the Scotch-Irish, who, while possessing the adventurous disposition of frontiersmen, were orderly, thrifty, persevering and self-reliant. They established schools, built and maintained churches, and in their stern and uncompromising way inculcated obedience to law, that is, to such law as in their opinion emanated from and rested on the public will. The gradual amalgamation of these elements produced the present race of Kentuckians. Their characteristics and peculiarities are to be traced directly to the original population of the state, and owe little or nothing to increase of population through emigration from the continental countries of Europe. In the cities and larger towns there are to be found emigrants from Europe, but the increase from that source has been comparatively small, and, generally speaking, the people have not been affected either by foreign association or foreign blood. No state contains a more distinctly local and homogeneous population than the state of Kentucky.

Of the earlier Kentuckians it may be said, that their respect for law, while genuine and sincere, was never permitted to conflict with the most comprehensive theory of individual liberty and personal dignity. In no country were personal rights more

universally or strenuously asserted. Each man considered himself the keeper of his own honor, and did not hesitate to redress such wrongs as affected his good name or that of his family, and especially the good name and fame of the women entitled to his guardianship and protection.

The founders of the state were local in their attachments and exceptional in their recognition of the claims of blood and consanguinity.

In their politics as in their religion they were ardent and emotional. They revered Washington, but followed Jefferson. Many of them were ready to separate Kentucky from the eastern states if the free navigation of the Mississippi river could be secured in no other way. Eleven out of the fourteen members sent by the seven counties of the Kentucky district to the Virginia convention voted against the adoption of the Federal Constitution. The visionary and absurd projects of Burr attracted the sympathy of many reputable people. The philosophy of the French Revolution took a firm hold on Kentucky politics and intensified the devotion of Kentuckians to their favorite doctrine of the supreme importance of individual rights and personal equality.

The people who organized the state were almost wholly Norman or Anglo-Saxon in their ancestry. There was scarcely a name to be found among them that did not indubitably point the line of descent to England, Scotland, Wales or Northern Ireland. Of the twenty-five members of the Political Club at Danville, which from 1784 to 1787 discussed with marked ability the steps leading to the formation and adoption of the Federal Constitution, there were but two who by any possibility could have been descended from continental European parentage. Of the forty-five members of the convention that framed the first state constitution, there were not more than three who did not trace their lineage to the kingdom of Great Britain and Ireland. So it was with the eleven senators elected to the first general assembly, and with the forty-five

representatives who sat in that body, as also with the forty electors charged with the duty of selecting the governor of the new commonwealth, and so with the names of all who were prominent in public affairs at or before the admission of Kentucky into the Union.

In 1792 Kentucky was, strictly speaking, an Americanized British state. The people were as thoroughly Norman and Saxon by descent as they were thoroughly American in their preference for American over British institutions. The lapse of a hundred years has worked no material change in the blood of the Kentucky population. The membership of the Filson Club, the representative Kentucky historical society, which in 1892 approximated in number six hundred names, contained less than twenty that were not distinctly English, Scotch, Welsh or Irish.

In the lists of the membership of the Kentucky legislatures of modern days, as of her delegations in the Federal Congress, and of her state officials, similar proportions of insular and continental names are invariably to be found. The blood of the mother country nowhere flows in purer strains than in the veins of the Kentucky people. If to any extent they possess the virtues or are subject to the vices of English civilization, those virtues and vices have come to them by legitimate inheritance.

If to be warlike is an admirable trait, they have always possessed it to an eminent degree. Without assistance they contested successfully the attempts of their savage neighbors to drive them from the country in which they had determined to make their homes. Under the leadership of George Rogers Clark they won from the British the Northwestern territory by their capture and occupation of Kaskaskia and Vincennes. Ten thousand Kentuckians participated in the defense of Ohio and Michigan in the war of 1812, and one third of the army which under Jackson defeated the British at New Orleans consisted of Kentucky volunteers. In the war with Mexico the question was

not, how many troops were required from Kentucky, but how many could the government be induced to accept. In the Civil War, in addition to possibly fifty thousand Kentuckians who served in the armies of the South, eighty-eight full regiments carried the flag of the Union. The recent war with Spain affords another illustration of the predilection of Kentuckians for military service.

From the first, the religious conditions of Kentucky fairly equalled those of any portion of the country. General education has not been neglected, and for thirty years past the most liberal provisions for the maintenance of the common schools has been rigorously enforced. Political disturbances have not been more frequent or more serious than in the other states. Periods of emotional politics have always been followed by corresponding periods of political conservatism.

Slavery existed, but with the least objectionable features of that institution, and until the political agitation of the question so inflamed the minds of the people in the North and South alike, that the impulses of humanity on the one side, and of reasonable forbearance on the other practically ceased to exert their natural influences, there existed in Kentucky a strong feeling in favor of gradual emancipation. The controlling majority of the Kentucky people could not be induced to follow the southern states in their attempt to dissolve the Union. The division of sentiment, followed by the alignment of her sons on different sides, and in the different armies that fought out the great battle for southern independence and for the preservation of the Union, and the further fact, that being a border state, her territory was necessarily the permanent field of military operations, resulted in the temporary dissolution of the bonds of society and the inspiration of feelings of bitterest personal hostility between those who had theretofore been the warmest friends. In many sections of the state the courts were suspended and civil process was unknown.

Social order, where it prevailed at all, was preserved by military control. At the close of the war the state government and the military authorities were almost in open hostility. Yet, within three years, these unhappy conditions were reversed; civil government was reëstablished, the courts were everywhere opened, and their writs almost universally obeyed and respected. Political disabilities were removed, bills of pain and penalties repealed, and the ex-soldiers, Federal and Confederate, set about the work of restoring good government and good fellowship, with a zeal and heartiness that could not, and happily, did not fail of success.

For a generation these surviving soldiers exerted a dominating influence in public affairs and that influence was at all times and under all circumstances on the side of peace and order and in support of the dignity and supremacy of the law. As long as the potency of that influence continued, good government was the rule. Rich and poor, white and black, enjoyed the equal protection of the laws, and the will of the people, as expressed at the polls, was cheerfully and unhesitatingly obeyed.

In 1890, yielding to the restless desire for change, the people called a sovereignty convention. The constitution framed by that convention provided, among other changes, that the *viva voce* system of voting, which had prevailed in Kentucky for a hundred years, should be superseded by the secret ballot. Statutes were enacted to carry the change into effect, and it was supposed that the purity of the ballot had been secured against all doubt or danger. In 1895, for the first time in twenty-eight years, the democratic party was defeated. Charges were freely made that the defeat was the result of fraudulent and false returns from that section of the state in which the local authorities were universally republican. The secret ballot and the new election law were denounced as affording opportunities for false returns, of which dishonest election officers had not failed to take advantage. In 1897 the democratic party recaptured the general assembly,

and secured the control of both branches thereof. For the avowed purpose of preventing false returns in the future, the election law was amended and the control of elections taken from the local authorities, and vested in a central board composed of three democrats. The local boards were to be appointed by the central board, without limitation as to their political complexion.

About the time of its enactment, this law was thus discussed by the leading democratic morning journal of the state :—

“In all the force bills meditated by the radicals in Congress during the dark days of reconstruction there were discernible some pretense and pretext, some lingering memory of republican instincts and traditions. Even in the Plebiscites of Louis Napoleon there was the outer display of a just electoral process and purpose. This force bill gives the voters of Kentucky not a ray of hope. It makes no claim or show of fairness. It places exclusively in the hands of three irresponsible persons, to be named by the authors of the measure itself, the entire electoral machinery of the state. That is the whole of it. In one, and at one fell swoop, Kentucky is to become the subject of a triumvirate, which is to decide who shall hold office and who shall not. Nominally, the people are to be permitted still to go through the form of election. They are to be permitted still to vote. The ballot box is not actually abolished. But the triumvirate is in each and every case to cast up the returns and determine the result.”

The bill was further denounced, “As an act to deprive the commonwealth of Kentucky of a republican form of government, for, whereas, most force bills have preserved the outward forms of republicanism, this bill defiantly creates a three-man power, under a one-man rule, as odious to liberty as the Directory in France under Barras, or the Consulate, after Napoleon had captured the revolution”.

How far these criticisms may have been just, and whether the law is as vicious and partisan as the journalist pronounced it, need not be determined for the purposes of this article. That the law is capable of being prostituted to partisan and dishonest ends cannot be denied, any more than that, under the adminis-

tration of upright and law-abiding officers, its provisions admit of an honest election.

The republicans without exception accepted the criticisms quoted as just, and professed to believe that the purpose of the law was to enable the election officers to return majorities against them no matter how the electors might cast their votes. Many democrats joined in that belief and avowed their readiness to act in concert with the republicans to secure the repeal of the odious enactment.

Divisions in the democratic party resulted in the nomination of two democratic state tickets, yet the regular democrats manifested the utmost confidence in their success. This was regarded by the republicans, and by the adherents of the independent democratic ticket, as conclusive evidence of the intention of the regulars to so manipulate the returns as to show a majority in favor of their ticket.

To the surprise of all parties, the republicans on the face of the returns had a small plurality, though the regular democrats secured a majority in each house of the general assembly. After fierce opposition the state canvassing board issued certificates of election to the republican candidates, and they were regularly inducted into office. This for a time seemed to put an end to the bitterest and most proscriptive election contest Kentucky had ever experienced, but such was not to be the case. Before the general assembly convened the democratic managers decided to contest the election of every state officer from governor down. They alleged gross irregularities in some sections of the state, and charged that in the cities of Louisville and Covington the republican governor, elected in 1895, had used the state militia to intimidate democratic voters. The opposition to the regulars denied the alleged intimidation, and scouted the pretense that the regular democrats, who were in control of the election machinery

in every county and precinct in the state, had permitted either frauds or irregularities to operate to their detriment.

For the minor state offices the contests were tried by the State Board of Election Commissioners, which was reorganized, as the republicans claimed, on a strictly partisan basis to insure findings in favor of the contestants.

The general assembly alone had power to try the contests for the offices of governor and lieutenant-governor. As to those officers the law provided that the original hearing should be by a joint committee of eleven members, selected by lot from the two Houses, the finding of such committee to be reported to the assembly for its approval or rejection. This committee was composed of ten members friendly to the democratic contestant, and only one who had supported the republican contestee. Fraud in its composition was openly charged.

After the hearing had progressed almost to a conclusion the democratic contestant for the office of governor was fatally wounded by an assassin. Naturally, great excitement followed. The committee speedily closed the hearings, and by a party majority, agreed to report that the democratic candidate had received a majority of the legal votes and was duly elected to the office of governor. Before that report was or could have been laid before the two Houses, the republican contestee, who was lawfully exercising the functions of governor, issued his proclamation proroguing the general assembly and changing its place of meeting to a town in a remote part of the state. His authority in the premises was denied, and is open to doubt. He called into service at the seat of government a force of volunteer militia, and closed the legislative halls against the members of the general assembly, and prevented them from openly meeting in any other building at the Capital. They did meet, however, in secret, with, as they claim, a quorum of each House present, and before the death of the wounded candidate, proceeded to ratify and con-

firm the report of the committee of contest. Following this action, the democratic contestants took the oaths of office, and duel state governments thus came into existence.

Waiving an expression of opinion as to the merits of the unhappy controversy, it may be assumed for present purposes, that the ultimate success of the democratic contestants will be the defeat of the candidates lawfully elected by the people. Also, that the use of the militia in dispersing the legislature and in closing the halls of legislation was unauthorized and indefensible.

All agree that the assassination of the democratic candidate for governor was as infamous as it was cowardly. In this connection, it may be said there is reason to fear that the extraordinary sum appropriated for the discovery and conviction of his assassin or assassins may lead to groundless arrests and baseless prosecutions, and terminate in the conviction of innocent persons through perjured testimony or otherwise.

That the good name and fame of the state have been tarnished by lawlessness under, as well as against, the forms of law, is undoubtedly true. In the estimation of the great mass of the people, neither side can defend or excuse its methods or escape its share of responsibility for the deplorable conditions brought about by the embittered and protracted controversy. Without regard to their political proclivities, the conservative people condemn the wrongful use, and more so, the wrongful misuse, of the remedies provided for legal redress, just as they condemn the attempts, by violence, to preserve rights which it is claimed the tribunals of justice cannot or will not enforce or protect.

In brief, on the one side it is insisted that, as the democratic candidates were entitled to make the contests, and as the Central Board of Election Commissioners had jurisdiction to hear and finally determine the contest for the minor state offices, and the general assembly like jurisdiction in the matter of the contests

for the offices of governor and lieutenant-governor. Resistance to their judgments is resistance to the law of the respective cases as declared by the tribunals, set apart by the constitution and the laws of the state, to hear and finally determine such controversies.

On the other hand, the claim is made, that those tribunals have openly disregarded the facts and the law, and converted themselves into mere agencies for carrying into effect a partisan conspiracy to override the will of the people, and to deprive the contestees of the offices to which they had been lawfully elected.

The constitutional validity of the reorganized central board was attacked, and the records of the general assembly showing the presence of a majority of each of the two Houses at the time the report of the committee on contest was confirmed, were alleged to be false and fraudulent. Under these circumstances, the refusal to submit to the action of the board of contest and of the general assembly is defended on the ground, that in no other way can the majority of the voters maintain their rights against partisan tribunals, voluntarily and knowingly engaged in the work of defeating the public will, especially where, as in these cases, the courts disclaim jurisdiction to inquire into the truth of the averments of fraud and falsehood.

The vice of this contention may be apparent to lawyers, but it is difficult to make it clear to the outraged citizen. He contents himself with the conclusion, that submission to such partisan action is the surrender of the right of the majority to rule the state, and therefore that free government cannot be preserved except by resistance.

Unfortunately, the leaders of the two parties have steadily rejected conservative counsels, even from those in pronounced sympathy with them. Party spirit was dangerously high before the assassination of the democratic candidate. Afterwards, passion took the place of reason, and judgment was dethroned.

Accepting as substantially correct the coloring given the con-

duct of each contending party by its opponents, we recur to the question, whether this deplorable drama is without its counterpart in the history of the American States.

The assassinations of Mr. Lincoln and Mr. Garfield correspond in atrocity with the assassination of Mr. Goebel, and the efforts of men high in authority to connect southern leaders with the assassination of Mr. Lincoln were as pronounced as any efforts now being made to connect prominent and reputable republicans with the assassination of Mr. Goebel.

The rejection by the general assembly of the returns of democratic election officers, so that a majority might be shown for the democratic candidates, is but a parallel to the action of the returning boards of Louisiana and Florida in rejecting the returns of republican election officers, to give to Mr. Hayes the electoral votes of two states, to which, on the face of the returns, Mr. Tilden was entitled. The Electoral Commission and the National Congress refused to look behind the certificates of the state returning boards, just as the courts of Kentucky have refused to look behind the findings of the legislative contesting tribunal. In each instance a like reason was given. The returning boards of Louisiana and Florida were held to have had final jurisdiction to purge the returns and to declare the results, and hence their certificates were not subject to collateral attack. So the courts of Kentucky have held that the general assembly, sitting as a board of contest, has similar jurisdiction, and that its findings are not open to question in collateral proceedings. The reason given may not be sufficient, but the parallel is none the less perfect, whether that reason be good or bad.

The use of armed militia in closing the halls of legislation to the members of the general assembly recalls to mind the use of United States troops in dispersing the legislature of Louisiana ten years after the close of the Civil War, and was not more lawless than the conduct of the unpaid American soldiers in

compelling the Continental Congress to flee from Philadelphia to Princeton to escape their fury.

The disregard of human life has long been a reproach to Kentucky. It has generally been manifested in personal broils or family feuds, or in the work of lawless mobs assuming to visit unauthorized and sometimes cruel punishment on suspected criminals. In this generation, however, there has been no organized violence in Kentucky comparable to well remembered outbreaks in Pennsylvania, New York, Ohio and Illinois.

The social character and conditions of Kentucky are in no sense unusual or abnormal. Political morality, bad as it may be, is not worse than in the states in which craft takes the place of force, and cold blooded and brutal party management accomplishes ends more permanent in their evil consequences than those that follow the most intemperate appeals to passion, prejudice or greed, though attended by fraud or sporadic acts of lawless violence.

Party methods now prevailing admit of no defense or excuse, and demand immediate and thorough reform. To those methods, backed as they are by a party spirit that tolerates, if it does not inspire them, the demoralization of state politics is to be attributed. In Kentucky as elsewhere party leadership has passed into the hands of politicians, who estimate party success more highly than the public good. Party organization is unfortunately controlled by those who in practice repudiate the maxim, that public office is a public trust, and value place and power in the proportion they afford opportunity to promote party and personal ends.

It is an alarming fact, that public affairs are in a great degree under the direction of those whose respect for the public will depends on whether or not the expression of that will conforms to their wishes and purposes, and who fail to recognize the great truth, "that absolute acquiescence in the decision of the majority *is* the vital principle of republics," whenever majorities pronounce against them.

Fortunately, the bane of office getting for mere profit and power furnishes its own antidote, and unless government by the people is to prove a failure and worse than a failure, the law-loving, God-fearing and patriotic elements of society will at no distant day awaken to the gravity of the situation. There need be no fear that the moral fibre of Kentucky has lost its virtue. Discouraging as is the outlook, the people are yet equal to their own political redemption, and will in the fullness of time reclaim all they have apparently lost. As in the past, so in the future, reason will prevail over passion, truth over error, and honesty and patriotism over selfishness, greed and fraud.



RELATION BETWEEN EARLY RELIGION AND MORALITY

EDMUND BUCKLEY, *Chicago.*



THE relations between early morality and religion are governed by the fact of development. As they are co-products of advancing or retrograding men under the influence of heredity and environment (which two are the direct cause of development), and as they influence each other whether for better or worse, in constant interaction (which is the indirect cause of development), they generally stand at about the same grade. These direct and indirect causes of development govern not only religion and morality, but also the other three cultural¹, namely, industry, knowledge, and art, both individually and in their mutual relations. It is evident that no definitive view of the developmental course of any single term or relation in this vast system of culture, can be gained without complementation from all the others. Goethe's maxim, "Wer eine weiss keine weiss," holds good not only of languages but of any system of things. If, therefore, in the present essay we isolate morality and religion, we would by no means ignore the other factors in the culture-problem, and shall take occasion at the close to make a comprehensive statement about them.

In view of possible misconceptions, it is necessary to make

(1) This I find a convenient term for elements of culture or of civilization.

clear and explicit what was merely implied above, namely, that morality and religion have distinct natures and independent origins. The relation between them is not one of causality on either side, nor even of common cause in any sense exclusive of the other cultural, namely otherwise than in the constitutive nature of man and his common home—this earth on which he dwells. This will appear plain on a little reflection. Religion is so far from having special relation to morality or indeed to any other cultural, that it stands among the cultural in a sub-class by itself. While industry, knowledge, art, and morality are four forms of mental function dealing with nature and man as objects, religion discerns a new class of objects beyond these two, namely certain beings to be characterized as superhuman and supersensuous. This difference between religion and the other cultural will appear on the subjective side as follows. While for each of them psychology must assume a particular norm (constitutional capacity or component element of the indivisible but complex self), for religion it need assume nothing other than just this entire self. Religion has peopled man's world with a class of beings other than man, though conceived in close analogy with him. Agreeably to this conception of religious beings in analogy with his own entire self, man has progressively conceived religious beings as material, vegetal, animal, human (body and soul as yet undifferentiated), personal, or even superpersonal, in the same order as he has conceived his own kinship to these various nature spheres. Thus, for example, the further back one goes in research in religion, the more important does the rôle of the animals become, until an acquaintance with their habits far beyond that possessed by the city-bred man becomes a *sine qua non* of comprehension. While, then, morality—with industry, knowledge, and art—constitute the quite familiar and unambiguous mental activities we know (psychoses), applied to or stimulated by nature and man, religion is just the application of the same psychoses to a new class of beings discerned

behind nature and man, and conceived as superhuman-super-sensuous, i. e., as superior living beings at the outset and as Absolute Person at the close of religious development. There is really no need, then, to confuse morality with religion or to derive either from the other. Man *worships* the gods, that is, prizes, values, honors, esteems them, in the highest degree indeed, but not in quality differently from men; for in both cases the psychosis is based on *personal* qualities in the object which include morality but also other human traits.

That religion and morality, though independent, at least tend to interaction, follows *a priori* from the fact that they are functions of one unitary mind; and will be shown *a posteriori* in the course of this essay. It is a moot point among hie^ologists whether this interaction has taken place from the first or not. If the unitary tendency holds good at all, it must of course do so from first to last. If early man conceived the objects of his religion as living beings after his own type, although that was imperfectly known to him, he must have conceived them through the human norms, which of course included the sense of morality. From this general concept in religion were subsequently differentiated moving or suggestively shaped things, plants, animals, men, persons, spirits, and gods. Thus far the tendency to interaction must amount to necessity. Certainly one may not introduce moral sense at any later date than the very beginning of man as such, for without moral sense he would not be man at all. But there are degrees here as everywhere, and the moral sense of early man was something hardly recognizable by other than the trained anthropologist. The like holds true of early religion; and the interaction between early morality and religion cannot be certainly affirmed beyond the necessary one described above, which simply distinguished gods as good and evil.

Authorities like Professors E. B. Tylor and A. Reville hold that not only are religion and morality independent in nature and origin, but that for some time they remain without relation. Thus Mr.

Tylor writes, "To some the statement may seem startling, yet the evidence seems to justify it, that the relation of morality to religion is one that belongs only in its rudiments, or not at all, to rudimentary civilization. * * * Savage animism is almost devoid of that ethical element which to the educated modern mind is the very mainspring of practical religion¹." Similarly the statement is made by M. Reville that "This parallelism in moral development and in religious development does not prevent religion and morality being in principle, and during a great part of their history, independent²." This view M. Reville supports with great force in his "Religions des Peuples non-civilisés," but, like Mr. Tylor, he uses admirable caution in avoiding absolute denials of interaction. Thus, in the absence of evidence for any religious morality among the African negroes (Part I, p. 118), he concluded that morality and religion stand there side by side without interchange, but concedes (pages 122-3) that at least in the cases of ordeals and secret societies, morality and religion are not complete strangers to each other. These secret societies combine mutual aid with a religion superior enough to show a monotheistic tendency. Mwetyi whose cult is the common bond of one such society, stands as guardian of treaties among neighboring tribes. In the case of the Kaffirs, the evidence is fuller and fairly justifies the conclusions of M. Reville that here "morality is at most juxtaposed to religion." The facts are that on attaining puberty, Kaffir youths are subjected to a six months' training in local groups under the leadership of an elder. They are circumcised, taught to build their huts, whipped, made to fast, watch, carry loads, and wield arms, instructed in morality (flee theft and adultery, honor your parents, obey your chiefs), and finally taught scraps of poetry that embody mythical and ancestral lore, and direct sacrifices to be made to the gods. A similar course of

(1) E. B. Tylor, *Primitive Culture*, vol ii. p. 360. 3d Am. Ed.

(2) A. Reville, *Prolegomena to Religion*, p. 221.

discipline but suited to their domestic habits, is administered to girls. Here plainly is no religious ceremony, but education in the total culture of which religion forms one part, and that, so far as appears, simply coördinate with the other cultural. The whipping, fasting, etc., are purposed to inure to the hardships incidental to warrior life. Neither scourging nor the license that follows this initiation has any religious significance. Reference to the details in Fritsch¹, one of M. Reville's sources, will correct a general statement about the god Unkulunkulu, made on page 140, which seemed to refer the origin of all Kaffir social rights to him. The fact is that these concern ancestral cults and the division of labor based on sex, neither of which belongs to the moral sphere. It is evident, however, that the tendency would be all towards inclusion, and that more intimate acquaintance may show that morality too was referred to Unkulunkulu. This has proved to be the case with several peoples cited by A. Lang in his recent work (page 327), "The Making of Religion," wherein he advocates with *doctrinaire* spirit and sometimes extravagant statements, the correct view that animism (religion based on ghost and spirit worship) cannot account for the worship of a Supreme Being as found among the lowest peoples; but advocates, together with this and as an essential feature of the case, "the prevalent alliance of ethics with religion in the creed of the lowest and least developed races." In support of the latter thesis, Mr. Lang appeals mostly to the mysteries (initiatory training at puberty as described above), which in some cases inculcate the tribal law and morality on the authority of a supreme god, and are likely—Mr. Lang claims—to prove to do so in other cases when we come to know them better. Thus in the Bora or tribal mysteries of the aborigines in S. E. Australia, the rules: 1, To obey the old; 2, To share all with their friends; 3, To live peaceably with their friends; 4,

(1) *Die Eingeborene Süd Africas*, p. 139.

Not to interfere with women ; 5, To obey the food-restrictions, are taught as precepts of Darumulun, the Supreme Spirit, otherwise called Master or Father. Again, the Andamanese, long supposed to be godless, are on later authority stated to worship a god Puluga who knows even the thoughts of the heart, and is angered by wrong doing, that is falsehood, theft, grave assault, murder, adultery, bad carving of meat, and witchcraft. He is also Judge of Souls after death. Mr. Lang claims and M. Reville concedes, that savages, and presumably early man, of necessity distinguished gods as good and evil ; and that they generally and naturally expected the good gods to sanction good conduct. This is correct, though one can easily overestimate such a condition, as Mr. Lang's glowing eulogies, in one place (page 195) positively contrasting the Kurnai mysteries favorably with Christianity, certainly do. A sure antidote to Mr. Lang's *couleur de rose* lies in the pages of W. Schneider's "Die Naturvölker" with its "Schreckbilder der Menschheit." We must somehow so construe Darumulun's cult as to admit beside it orgies too revolting to bear description. How this apparent inconsistency can happen, will appear later.

Upon this subject C. de la Saussaye writes, "If, however, one finds the origin of religion in animistic or naturistic views and feelings, there is no ground to make the origins of religion and morality coincide. For neither the souls and spirits nor the nature gods were originally or necessarily guardians over any moral law, and the well-being which one expects from them, or the danger which one fears from them, stands in no direct connection with moral conditions or thoughts¹." We have already seen that while the "originally or necessarily" must be allowed, recent evidence shows how naturally, and earlier than was supposed, the guardianship takes place. Also, though well-being and danger stand in no direct connection with moral conditions, the indirection, *via* man's unitary self, soon makes such.

(1) C. de la Saussaye, *Lehrbuch der Religionsgeschichte*, i. pp. 34-35. 1st Ed.

Here it might be objected, how, if the gods are necessarily conceived as good or evil, does it come to pass that no votary approaches a good god without a gift in his hand; that offering is the central religious act, and prayer nothing more than its accompanying explanation, so that the maxim, *Do ut des*, applies equally to human and divine relations. These practices imply no denial of goodness in some of the gods, but only that the goodness is conceived as insecure, similarly with that of men. Here is reflected that degree both of certainty and uncertainty, that attends most of the operations of nature which serve as types of the vast majority of the gods.

Finally, we notice a difficulty raised by Count Goblet d'Alviella as follows: "When interpretations from nature have done what they can towards explaining mythology, we still have a residue which represents the free play of popular fancy. Why has imagination here, too, allowed itself so free a course in directions which reason and morals, as we understand them, would have prohibited? The anthropological school explains this anomaly by throwing back the formation of the myths to an epoch at which their authors were still at the intellectual and moral level of the savages of to-day. * * * But, if this theory accounts for the absurdity and the crudity which make the more cultivated nations blush for their mythology, it does not explain why the authors of the myths have ascribed acts to their deities which they themselves would regard as blameworthy or degrading. The only possible explanation is that at first morals had no influence whatever on the conception formed of the gods¹." We beg to submit on the contrary that the theory does explain both the mythical interpretation and the free expansions of them by fancy. For, first of all, many amours of the gods occasioned no scandal simply because they corresponded to the now well known sexual freedom of men with the unmarried women of the

(1) G. d'Alviella, *Hibbert Lectures for 1891*, pp. 176-7.

tribe, or with strange women, to say nothing of concubinage; while goddesses, *e. g.*, Hera and Radha, remain faithful, being, according to early and long subsequent notions, the actual property of their husbands, acquired by purchase and defended if need be by force. Where, as happened in the notable cases of the Indian Kali, the Egyptian Hathor, and the Babylonian Ishtar, a goddess is wanton, these mighty deities, "mothers of mankind," are divine independently of their spouses and reflect the earliest social system known, that of the matriarchate, where the woman chose her husband and dismissed him at will for another, and descent was reckoned in the female line. It is these goddesses, with the Greek Aphrodite and other derivatives from Ishtar, that require in their cult the sacred harlots that seem so incomprehensible to us. When, on the other hand, adultery with another's wife, or incest was in question, the god was dissuaded as was once Brahma, or cursed as was Shiva, cursed or justified as Indra, or blamed as Varuna, or punished as Prajapati. Similar disapproval of the gods meets us in Shintoism and in the religion of New Zealand. Thus did the moral sense of the myth-makers assert itself¹. On the analogy of these, and in the absence of evidence to the contrary, (although Hera's jealousy of Zeus and Radha's silent protest against Krishna implied disapproval), we may suppose that the mythic crimes of Zeus and Krishna likewise always excited silent disapproval, but that they were tolerated as must have been done in the case of a powerful chief. Right protested, but might prevailed. Though not paragons of virtue, Zeus and Krishna were gods and no demons, and only too much like the folk's hero anywhere.

In all three of the above cases, then, instead of cutting the Gordian knot by assuming that morality had no influence on the conception of the gods, we may hold that morality exercised

(1) E. Hopkins, *Religions of India*, p. 197; J. Muir, *Old Sanscrit Texts*, vol. i. pp. 466-7; vol. iv. p. 45.

its influence by protest, wherever the character of the god really fell below the ideal of the time.

As for the examples given by Count d'Alviella from Shintoism and Chaldeeism, the former assumes the error that morality acts only through a code, while the latter overlooks that admixture of moral with ritual impurity, which forms a first step in interaction with religion. Details of these will appear later.

While the thesis that religion sprang from morality would hardly be maintained by any one now-a-days, the opposite one, that morality sprang from religion, finds some eminent defenders. Though Mr. Lang, in his "Making of Religion," holds two positions that favor the derivation of morality from religion, namely, an entire separation of mythology, which he supposes foul, from religion which he supposes fair, and an entire independence of morality and culture, his positive statement (page 192) that "it (the moral code) reposes for its origin and sanction on such (theological) dogmas," is nowhere repeated or developed by him, and may, therefore, be understood as an exceptional extreme provoked by the opposite extreme of Mr. Huxley's, which he is combating. Professor Pfeiderer is more explicit in his contention that "the historical beginning of all morality is to be found in religion," though here, too, the preceding context supports the view of interaction, which is quite another thing. Professor Pfeiderer is contending with Positivism generally, as Mr. Lang was with it in the shape of Mr. Huxley, and probably lost his balance in the same way. He points out how, in response to the beneficence of the nature powers, man warms to them in reverence and sympathy, imitates their life in his worship, and further seeks their coöperation at the crises of his own life, such as birth and death, puberty and marriage, war and peace, seed-time and harvest. "In the usages which men have been accustomed, from the earliest times, to observe on such occasions, lie the beginnings of all social customs and, therefore, of all morality. It is, however, an incontestable fact and one established by a growing body of

evidence in recent investigation, that all these usages were originally of a religious character, and were nothing more nor less than primitive acts of worship, in which man sought to bring his own weak life and the lives of those belonging to him, into connection with the powerful life of the deity, to celebrate his living intercourse with the power which governs the world." Birth and death ceremonies were indeed originally religious, but the training for assumption of life's duties at puberty, as also the acquisition by purchase or capture of a wife which constituted early marriage, were not "originally of a religious character," but of their own individual character. The "historical beginnings of all morality" are not to be found "*in* religion," ("*von* der Religion"), but *with* religion, i. e., in association or interaction with it. A subsequent statement by Professor Pfeiderer that among other institutions "the beginnings of all ruling families" are traceable to religion, betrays his fallacy yet more plainly; for obviously families acquire rule by skill and courage, shown mostly in warfare, and only later get it *explained and sanctioned* by their supposed descent from a deity. Thus the Japanese Imperial Line traces its ascent and therewith its unquestioned right to rule, to Ninigi no Mikoto, that "Sovereign Grandchild" of Amaterasu, son-goddess of Japan, who descended from his heavenly home (really Korea) on to Mount Takachiho.

The notion that morality originated from religion, derives a show of support from the fact that everywhere early moral codes are found only in religious books. This is one of the many cases where the problem of two cultural is solved by comparison with the others. Not only moral codes but knowledge—whether as biography, history, philosophy, or nascent science—and art, especially poetry, were all included in the various ethnic scriptures; and for the simple reason that the priest was the lettered

(1) Pfeiderer, *Philosophy of Religion*, vol. iv. p. 229, or *Religionsphilosophie*, vol. ii. p. 579.

and leisured man of the community who composed much and collected more. Thus the Brahman absorbed the philosophic insight of the Kshattriya as evidenced in the Upanishads, where the nonsense ceases only when the Kshattriya begins to speak; and the Puranas, those later scriptures of the Hindu sects, constitute encyclopedias to their readers. The same comprehension of culturals under one hand appears in China, where, however, the hand belonged to an official and not a priest, who was indeed unknown to Sinism.

Finally, morality had no *need* of derivation from religion, as anthropology and sciences of its kin abundantly prove, for they trace with scientific method the rise and growth of morality on entirely human grounds, though not without interaction with religion. This argument needs to be weighed as well as counted. Men never lived as isolated, unrelated individuals. First, under the care and presidency of a mother (the matriarchate), and later under that of a father (patriarchate), men grew up and lived in groups united and controlled by social ties, in especial being made continent by marriage, and kind by parentage. Marriage was mostly a civil contract, at first informal, then increasingly formal and therewith sanctioned by religious ritual as were other important actions. Marriage by purchase persisted to English times, as appears in the West Saxon law—"If a man buy a wife," etc. The family was the home of morality as it remains to this day. "An ounce of mother is worth a pound of clergyman." Here familiarity was complete, and sympathy the result. Kin and kind belonged together in fact, as the words that represent them do in derivation. But towards a common enemy, and such every stranger was considered,—*hostis* means both—these barbaric families and tribes showed a treachery, cruelty, and lust now judged inhuman. War was chronic, and accompanied with murder, robbery, and rapine, all of which are excluded from our occasional warfare. When peoples were divided from others by natural barriers, each looked on itself as the whole or the center

of the world, and the favored of the gods, while others were "hordes" or "barbarians." Those acquainted with savages are amazed in turn at their goodness and badness, the conclusion from which is that they are not so much immoral as unmoral, i. e., not yet moralized. Later on, custom and public opinion grew humaner and passed into positive law. But full appreciation of such moral independence can be gained only by perusal of picturesque and strange details in such a work as A. Sutherland's "Origin and Growth of the Moral Instinct," as, for example, those concerning licentiousness and infanticide. The origin of the marked and familiar sexual variations in morality, that man excels in truth and justice, but woman in chastity, stands in no conceivable dependence on religion but is readily explained by anthropology. Thus, man's sexual passion is stronger and more constant, has no rival in child-nurture, is not restrained by sense of possession and control by a stronger spouse, and finally is not so exposed to detection. As for the cruel practice of infanticide, it also stands in no discernable relation to religion, but varies directly with the poverty of communities, being commonest where population is densest in relation to the means of subsistence, whether that be in Australia, China, Polynesia, or India. The crime is nearly always committed with the greatest regret and in behalf of the common good; while infants once permitted to live a few days, or even in some cases a few hours, cannot be dispatched, and are thereafter treated with the utmost and sometimes excessive tenderness.

We may now proceed to a survey of the actual relations between early morality and religion. The possible cases obviously are the injury or the benefit of religion to morality, and the same of morality to religion. All these have in fact happened, and we shall consider them in order. If morality was, as we have just seen, capable of independent rise and growth, certainly immorality was so; and consequently neither of them stood in any need of help from religion. But, as a fact of this interrelated world,

religion promoted by example and suggestion the one as it did the other. The nature gods were conceived as before man in time and above him in power, and, therefore, held unquestioned sway over his conduct. This sway had effect upon man both for evil and for good ; and any reader disposed to recoil from the gruesome picture of the former, must in consistency do so from the noble outlook upon the latter. J. Muir forgets this, when he writes, "on the injustice of ascribing an immoral character to the Hindu writings or to the deities whom they describe, on the ground of such legends as the one before us (the incest of Brahma with his daughter), or of the dialogue between Yama and Yimi (a sister proposes incest) * * * ;"¹ for otherwise he must in consistency have abjured any merit to either scriptures or deities from the noble hymns and maxims which he has made accessible in his "Metrical Translations from Sanscrit Writers."

It will promote order among a mass of data, if we distinguish between the injury done to morality by religion, in prompting vice through its own positive quality, and that done in sanctioning practices already vicious. The all-comprehensive vices are cruelty culminating in murder, and lust culminating in adultery. These are bestial and savage traits, only gradually disappearing as humanity progressed, and are frequent companions throughout its course. Occasionally in modern times a monster appears who joins blood or flesh (cannibal) lust to his sex lust, as the terrible cases (among others that of Jack-the-Ripper) collected by Kraft-Ebbing show. One savage trait can summon another in the general reversion to type exemplified in these men, if such they must be called. Though, by a transformation of mental energy, now cruelty and now lust appears, their association soon becomes familiar to the student of early culture, and is notably present in connection with religion among both Indo-Kelts and Semites, but with less evidence among Mongolians.

The cult of the Hindu Shiva and his spouse, Kali, well exem-

(1) J. Muir, *Old Sanscrit Texts*, vol. iv. p. 48.

plify the *promotion* of *associated* cruelty and lust by religion. Shiva, who, at present divides with Vishnu the worship of India, appears in five chief characters as Destroyer, Reproducer, Ascetic, Philosopher, and Rioter, of which the first two and the last as plainly reflect nature as do the third and fourth the Brahman. Shiva is, in fact, personification—as Rudra—of the howling storm on the wild Himalayas, and—as Kala—of all destroying time; while as Shiva he represents the eternal reproductive power of nature. Sacred pictures represent him with ash-covered body, with a serpent round his neck and a second necklace of skulls, riding on the generative bull, Nandi. As Rioter, Drunkard, and Dancer, Shiva reflects equally mountain winds and mountaineer. Cemeteries and crematories are his haunts, imps and demons his servants, ferocity and irascibility his normal state. The Elephanta Caves represent him immolating a child. But this function as Destroyer together with that as Rioter, are now preferably transferred to Shiva's spouse, Kali (the Black), the great Shakti (Power) of Nature, the Jagan-Mata (Mother of the Universe). The worship of this goddess together with the spouses of all the other great gods, forms a distinct and large phase of Hindu cult, known as Shaktism, especially prevalent in Bengal. One of their scriptures, the Tantras, describes Kali as follows: "A Kaulika (i. e., a Shakta) should worship Kali, who lives amongst dead bodies; who is terrible and has fearful jaws; who has uncombed hair and a glowing tongue; who constantly drinks blood; who stands over her husband, Maha-Kala (Great Time) and wears a garland of skulls on her blood-besmeared throat; who has prominent breasts; who is waited on by all the Siddhahs as well as by the Siddhis¹." Kali thirsts for blood, especially human blood, and accordingly was worshiped by human sacrifice. "Among the Shaktas it is a meritorious act to sacrifice a man." This is said to be now extinct, but animal

(1) Sir M. Monier-Williams, *Brahmanism and Hinduism*, p. 189.

blood flows freely in Kali's temple at Calcutta, and her votaries hack their own bodies at the Shakta ceremonial which is held in secret.

Besides this Shakta cult, the Shaivite temples everywhere maintain troops of so-called dancing girls, *deva-dasis* or god-slaves, married to the god but at the service of priests and votaries. At the Tanjore temple are fifteen such slaves and in the Madras Presidency, according to the census of 1881, there were eleven thousand five hundred and seventy-three. They are splendidly appareled and jeweled, some earn fortunes, and occasionally devote them to useful public works. In view of all this, Mr. Hopkins may well write, "In modern Hinduism, to kill, lust, steal, drink, so far from offending may please a god that is amorous or blood-thirsty or, like Shiva, is 'the lord of thieves.' Morality here has god himself against it."

It is probable that the Shakta cult described above was absorbed or at least reënforced from cults of the (still many) wild aboriginal tribes of India. Among them the Khonds practiced human sacrifice to both Sun-god and Earth-goddess until it was suppressed by the British, and celebrated their harvest festival with every kind of license.

The Greek analogue of Shiva is Dionysos. His nature type is uncertain, but his cult at the winter solstice favors personification of nature life, while later he naturally became Wine-god. He also became a leader in the ancient phallic cult and was invoked as the "Noble Bull." His festival was held at night by torchlight on mountain heights. Here his votaries, mostly women—Maenads or Bacchantes—danced wildly to ringing music and their own yells of joy, with fluttering hair and dirk or lance in hand, until in holy craze they seized and rent the living victim—animal or human—and devoured it raw. Licentiousness doubtless accompanied the phallic side of his cult. Lehmann's comment on the cult could, therefore, not well be other than "In Griechenland hat der Bacchusdienst allerdings unsägliches Unheil gestiftet."

Among the Babylonian deities Ishtar was goddess of fertility, but also caused decline, and thus reflected the two seasons of the nearer Orient, dry summer and rainy winter. Her later identification with the planet Venus arose from the fact that it corresponds as evening and morning star to these two seasons. As Winter-goddess she destroys her spouse Tammuz the Sun, and then, weeping, passes to the underworld in search of him, upon which all fertility, both vegetal and animal, ceases. When she proposed union with Gilgamesh, the hero rejected her on the ground of her cruel treatment of previous lovers. Tammuz, the plumaged bird, the fierce lion, and the gallant horse, all had perished under her sway¹. This fierce deity naturally became War-goddess, and was adopted as such by the Assyrians in consort with their own god Ashur, where she could well preside over the well known barbarity in war of that people, though human sacrifice to her has not yet been evidenced. With this cruelty of Ishtar was matched her wantonness as Love-goddess. In her temple at Erech (Uruk) and elsewhere it was that every Babylonian woman must, once in her lifetime, as Herodotus tells us, prostitute her person to some votary and present her hire to the goddess. Furthermore, both male and female harlots were permanently attached to her temples, and the female were sufficiently numerous and important to be divided into three classes. "The name given to the harlot among Babylonians and Hebrews, Kadishtu, or K'desha, that is 'the sacred one,' is sufficient evidence that, at its origin, the rite was not the product of obscene tendencies, but due to naïve conceptions connected with the worship of Ishtar as the goddess of fertility²." That is to say, religion was here promotive of licentiousness, which is just our thesis.

Similar cults were known in Syria to Atargatis and Attes, and

(1) Compare the picturesque details in *The Religion of Babylonia and Assyria*, by M. Jastrow, chap. xxiii.

(2) *Ibid.*, p. 476.

in Phœnicia to Baalat and Baal, or Milkat and Melek, or Astarte and Adonis. Here bull and ram, cow and dove, symbolized the productive power, while lion represents the destructive one for both god and goddess. To such deities were offered human sacrifice, or one of its substitutes, hair-clipping, circumcision and harlotry. The Phœnician gods in particular were monsters, mis-formed and terrible. Melek, or Moloch, of the Phœnician colony, Carthage, has given his name to modern literature as title for bloody principle or practice. To placate his supposed anger in times of peril, children were placed upon his brazen arms, whence they rolled into the fire before him.

The Chinese have both lacked the imagination to develop nature myths very far, and their dominant politico-ethical Confucianism later prohibited or curtailed such ceremonies as reflected them. Not in Confucianism but in Taoism, not in the Five Kings or Four Shu, which form at once the classics and scriptures of the *literati*, but in the pages of Mayers and De Groot, who have collected for us respectively the folk-lore and festivals of the Chinese, must we search for surviving scraps of cruelty and lust learned from nature worship. In honor of the God of Production are still held processions with lanterns, with cars adorned with branches, and with priests bloody with self-inflicted wounds; but for evidence of license, we must revert to a Chinese history of the seventh century, demanding prohibition of a festival then held at full moon of the first month, in which men dressed as women, singing girls and actors participated, and every one indulged in obscene talk, quite in the style of the infamous Indian Holi'.

Cases abound where nature cult has incited to lust without the associated cruelty, but our limits will allow only a few brief mentions. First, there is the veritable worship rendered by the Vallhabhas of India to their spiritual leader, the Maharaja, which involves, besides eating the dust whereon he has trod, and drink-

(1) J. J. M. de Groot, *Les Fêtes annuelles à Amoui*, pp. 140 and 277.

ing the water in which his feet were washed—called “feet-nectar”—and other revolting degradations, the surrender of themselves by women to the caresses of this representative of Krishna. Then there is the obscene Holi Festival at springtide in India for Krishna’s honor; the similar Lupercalia of old among the Romans; the orgies lately sequent on the phallic cult in Japan; and last, the Spring Festival of our Teutonic ancestors in honor of Freyr and Freya, the “Lord and Lady” of Fertility, the licentious survivals of which excited the protest of English Puritans. Similar practices among extant savages and barbarians are numerous.

All the above mentioned rites and festivals are representative or sympathetic with the deeds of the gods. On other occasions these deeds are presented in formal drama, as are the amours of Krishna, and the obscene nature myths represented by the Areoi of Polynesia. These dramas begin after the worship proper, though still in presence of the idol, and last throughout the balmy Indian night till the following morning. Dances, too, are in all lands polluted from the same stream, being originally something very different from the arabesques that they have since become.

Religion has also promoted lust indirectly by its animistic doctrine of continued existence after death. When this did not go the length of compelling the hapless Indian widow to accompany her lord, it required her perpetual widowhood, even when only betrothal had united her to him. Such maidens, or real but young widows, receive only contumely and hardship from their families, and are thus often impelled to a life of concubinage or prostitution.

Religion has also promoted cruelty independently of its association with lust, and that both as naturism and animism. Man has everywhere ranked as the most valuable of the objects used in sacrifice, and though the first to disappear from the list, has left ample evidence of once being there. The evidence fails for Babylonia and Assyria, but in Greece human sacrifice was offered to Zeus, Athena, and Dionysos, and that late into the historic period;

a maid was offered yearly to both the Nile and the Hoang Ho; and the voluntary drowning of some votary to secure rain, is still common in China. In West Africa human sacrifice is made especially to animal gods. It is in survival of this once familiar rite that a Chinese will sometimes put his head through a hole in the sacrificial table, in order thus to persuade the god into unusual benevolence. Difficult structures like bridges and ships were generally started with sacrifice of man, but the hekatombs have fallen when peril in war has been taken to imply an indifferent or angry god, to secure whose help required some signal display of devotion. Here belongs the famous Moabite Stone: "I am Mesha * * * King of Moab. * * * and Chemosh said unto me 'Go, take Nebo against Israel.' And I went by night and fought against it from the break of dawn until noon. And I took it, and slew the whole of it, seven thousand men, and * * * and women, and * * * , and maid servants, for I had devoted it to 'Ashtor-Chemosh.'" This recalls the similar command of Jahveh to Saul; and the like "devotion" is recorded by Tacitus of a German tribe victorious over a rival for possession of a salt spring; "horses, men, all that the conquered possessed, were given to destruction." To which German god the vanquished were devoted matters little, for Tiu, Thor, and Woden were all war-gods and all received human sacrifice on the grand scale. So late as the tenth century Scandinavian cult had to keep Thor's altar red and gleaming with sacrificial blood; and Ari of the eleventh century records, "There is still to be seen the doom-ring wherein men were doomed to sacrifice. Inside the ring stands Thor's stone, whereon those men who were kept for the sacrifice had their backs broken, and the blood is still to be seen in the stone^r."

These ruthless rites parallel those narrated by the Spanish, Bernal Diaz, of the Mexican war-god, Uitzilopochtli; "and all

(1) F. B. Gummere, *Germanic Origins*, p. 466.

the walls of this oratory were so bathed and blackened with cakes of blood, as was the very ground itself, that the whole exhaled a very foul odor." We find scant evidence as to the precise motive for this "devotion," but can see in general that as votive or conditional promise to give certain objects—men, horses, clothes, weapons, etc.—to the god, it implied the delight of the god in the destruction of these things, and, therefore, the promotion of cruelty by religion. A deity usually becomes war-god by reason of asperity in his nature type, as with Woden from the wind, Thor, or Thonar, from the thunder, Indra from the thunder, Jahveh from the storm, and Ishtar from the winter. Even with sacrifices classed by Mr. Tylor as deriving value from the abnegation of the offerer, this asperity of the god cannot be denied. So, *e. g.*, Jephthah yields his hapless only daughter a burnt offering to Jahveh as the price for victory over the Ammonites; the Moabite king did likewise with his eldest son to Chemosh when the battle was too sore for him; so did our Teutonic ancestors offer some "dearest" thing—first-born or even king—when in sore distress; and so again with the Greek Iphigenia and Polyxena.

Certainly not less human slaughter has been wrought by religion in its phase of ancestral worship, and here the motive, to supply the dead with companions, is as clear as the practice was general. Two instances must suffice. Mr. Tylor tells us that "The king of Dahomey must enter Deadland with a ghostly court of hundreds of wives, eunuchs, singers, drummers, and soldiers;" while Mr. Martin records of the mild Chinese that "In 1854, when a rebel stronghold was taken by Sengkolinsin, a Mongol prince, the prisoners were offered in sacrifice to the manes of his fallen soldiers—their hearts being eaten by the victors to increase their courage." Here also belong the horrors of the Indian *sati* or cremation of a widow along with her dead spouse.

The evil effects of religion have been most generally evident in the strenuous opposition which it has offered to the change, and consequently to the improvement, which usually come on the

suggestion of science or morality. We shall meet instances of this phenomenon when considering its converse, the reform of religion by morality ; but we may here notice a notable case in India where reform has not yet prevailed. While British law suppressed *Sati* and raised by one year the too early marriageable age (both outcomes of animistic religion), it has not dared to forbid the obscene sculptures and pictures required by the religious symbolism of Hinduism. The Indian Penal Code after prohibiting secular obscenities, adds "This section does not extend to any representation sculptured, engraved, painted, or otherwise represented on or in any temple or on any car used for the conveyance of idols, or kept or used for any religious purpose." So general is this tenacity of religion for the old in face of reform, that one of the most familiar phenomena to the hierologist is a compromise between religion and reform known technically as survival. So *e. g.*, with the straw, clay, or wood images that replaced the person previously buried with the dead. But it is especially as ancestorism that religion is the type and guarantee of that conservatism which opposes progressive morality. What his father did is good enough for the Chinese or Indian of to-day, and the former in particular expressly aims to conform to type and repress all free variations. It is ancestorism again that urges early marriages and numerous offspring, in order to secure descendants to offer the funeral rites ; and thus so enormously increases population and therewith the competition for subsistence as to put a generally prohibitive extreme of sacrifice upon all benevolence. Such is the conclusion thrust upon the reader of Mr. Arthur Smith's "Chinese Characteristics." Economy equally of the truth and of benevolence has become a fixed habit in a country where people simply swarm.

Let us now turn to the brighter side and see how religion has *promoted* morality. If naturism has suggested vice from certain nature types, it has quite as distinctly suggested virtue from others. Of course the man capable for either virtue or vice must

be assumed as subject, but none the less has religion often supplied the stimulating object.

No better evidence for the promotion of morality by nature religion in its form of Heaven worship could be desired than that negative kind afforded by the failure of Mr. Lang to account for the "undifferentiated Being, eternal, moral, and creative," which he discovers among so many savage peoples, just because he ignores the origin of such Being from a Heaven myth¹. Yet out of the fourteen instances of such eternal, moral, and creative beings cited by Mr. Lang, where any clue to origin exists, eleven are fairly traceable to Heaven. Thus Darumulun "watched the youths from the sky"; the Australian "could see Bunjil up there"; in the mysteries of the Kurnai, "the initiator points to it (the sky), calling out 'Look there, look there, look there!' They have seen in this solemn way the home of the Supreme Being, 'Our Father,' Mungun-ngaur, whose doctrine is then unfolded by the old initiator in an impressive manner." The Andamanese Puluga is "like fire," and "knows even the thoughts of the heart." Among the Zulus, "the King above punishes sin, striking the sinner by lightning." The Dinkas of North Africa worship "the All-powerful Being, dwelling in heaven, whence he sees all things. He is called 'Dendid' (great rain, that is universal benediction)." Finally, Taaroa, the supreme god of the Polynesians, is demonstrably Heaven, as Gerland shows. A transparent example of Heaven supplying such exalted attributes is given by the Chinese Tien, as explained below, and this may well serve, if need be, as clue to the others. It is curious how Mr. Lang manages to avoid allusion to naturism, *e. g.*, on pages 206 and 217, where it is forcibly suggested to the mind of any one conversant with hierology. He very properly opposes ancestorism as a complete theory of religious origin; but is in error when he further ignores naturism, and in consequence has left to him only

(1) A. Lang, *The Making of Religion*, p. 274.

a confession of obscurity (page 213), and for part of the facts degeneration (page 219) from a primitive theism (pages 226 and 290) in the shape of "an undifferentiated Being" (page 274). This undifferentiated Being may well have been the first object of man's worship; but, if so, needed suggestion by some concrete thing to the then childlike mind of man. For such service the heaven above us, equally great, vague, and comprehensive—besides having many another quality suggestive of more definite traits—was incomparably better fitted than any other object. Father Heaven may well have been the first god to man, as the Father in Heaven will remain his last. Finally, Mr. Lang summarizes (page 328) for "a Supreme Being," belief in whom cannot be explained, except possibly as by St. Paul, according to the argument from design (page 331). But one may object here again, that the power to design together with much more, is implicit in the *personification* of every good nature god, and that consequently naturism should be recognized as the main source of religion. None of these considerations are touched by Mr. Lang's apology in his note (page 320), which for the rest is insufficient to its purpose.

Some notable cases of moral naturism are the following: Heaven and Earth have seemed not only physical but mental parents of man. Especially Heaven knows and rules all, and punishes or forgives. The Chinese Tien has so many supreme attributes that J. Legge did not hesitate to translate his name by God (with the capital). From the twelfth century B. C. we read:

"With reverence I will go
Where duty's path is plain.
Heaven's will I clearly know;
Its favor to retain
Is hard;—let me not say
'Heaven is remote on high,
Nor notices men's way.'
There in the starlit sky
It round about us moves,
Inspecting all we do,
And daily disapproves
What is not just and true.'" (1)

(1) J. Legge, *The Religions of China*, p. 114.

Or we may learn from Chinese biography how Heaven and Earth worked for righteousness. Yang Chen of the second century A. D. refused a thank-offering from a beneficiary with the words, "Heaven knows it, Earth knows it, you know it, I know it; how say you that none will know it"? The Indo-Keltic gods, Dyaus Pitar, Zeus Pater, Jupiter, and Tiu Fader bear their witness for the union of the notion Heaven and Father from prehistoric times, though the first and last named transferred their attributes later to other gods. The hymns to the majestic Varuna, another heaven god, probably of the night, reveal in perfect transparency the nature origin of their moral ideas.

"The mighty Varuna who rules above, looks down
Upon these worlds, his kingdom, as if close at hand.
When men imagine they do aught by stealth, he knows it.

May thy destroying snares cast sevenfold round the wicked,
Entangle liars, but the truthful spare, O King!

Forgive the wrongs committed by our fathers,
What we ourselves have sinned in mercy pardon;
My own misdeeds do thou O God, take from me,
And for another's sin let me not suffer."

Sun gods, like the Indian Surya, have "an all-seeing eye," or are like the Persian Mithra "unto whom nobody must lie," or, like the Egyptian Osiris, become judges of the dead. Or a moon god, like the Babylonian Sin, is "Father, merciful One and restorer * * * Thy strong command, produces right and proclaims justice to mankind." Or the fire god, the Indian Agni, like his nature type, is welcome in every home.

"In every home thou art a welcome guest,
The household's tutelary lord; a son,
A father, mother, brother, all in one;
A friend by whom his faithful friends are blest."

Or Athena, whether as lightning or dawn, naturally becomes a goddess of wisdom. Or, finally, as Brahmanism approached the pantheistic world view, the Infinite as Soul or Person (Atman or Purusha) became the inner witness of man. "The wicked

indeed say in their hearts, 'Nobody sees us'; but the gods distinctly see them and Purusha within their own breasts." Thus, from of old have the heavens declared the glory of God.

Professors F. Max Müller and A. Reville agree that, before any of the individual powers, such as those just described, were interpreted into mythic persons, the fixed order of nature had impressed man and become a type of his social order. This path or course of the heavenly bodies and seasons was gradually moralized, just as our notion of right (straight) has been into righteousness. We still make the change from natural to moral in the lines :

"Awake my soul, and with the sun
Thy daily stage of duty run,"

and still preserve the ambiguity in the phrase, "Order is Heaven's first law." This concept appears equally in the Indian Rita, the Persian Asha, the Egyptain Maat, the Greek Dike or Errinys, and, combined with other concepts, in the Chinese Tao. Since instances of all but the last named have been collected by Professor Pfeiderer, I will cite only for this last¹. "I do not know its name, and I give it the designation of the Tao (the Way or Course) * * * Man takes his law from the Earth; the Earth takes its law from Heaven; Heaven takes its law from the Tao. The law of the Tao is its being what it is. * * * Princes and kings who from it get the model which to all they give."

The gods have not only required virtue from their votaries, but have served as models of it themselves. Nine tenths of the great gods were the benefactors, friends, comrades, leaders, and ideals of men. Especially the solar deities like Gilgamesh, Herakles, Rama, and Maui, after being interpreted from nature according to the folk-type, reacted onto the latter as heroes. A. Reville well says of the last named, "Maui remains definitively the ideal type of the Polynesian, daring, adventurous, sportive, derisive, more brilliant than good, and least of all scrupulous when

(1) O. Pfeiderer, *The Philosophy of Religion*, vol. iv. pp. 234-8.

the means proper to securing victory was in question." We must remember that this was virtue as understood by the barbarian Polynesian. Many another glorious nature-god must have "disturbed with the joy of elevated thought," and have moulded early impressionable man to its likeness as did the Great Stone Face in Hawthorne's famous story. R. Shibata is a good spokesman for the early man when he says that "Every Japanese should make Mt. Fuji the example and emblem of his thought and action, be plain and simple as the form of the mountain, and make his body and mind pure as the serenity of the same." Even Mr. L. F. Ward concedes this much to the gods, when he writes "These deities are the creatures of the most advanced minds of every people, and, therefore, always reflect the highest mental and moral attributes of every age. As such they become standards toward which the lower strata of society will gradually rise, in proportion as they seek to assimilate their character to that of their deity." Indeed, before a religion acquires a code from morality, these examples form its only means of influence upon men, and they always remain the most potent means. Shintoism presents to this present day a type of this class of religions. In the absence of either doctrine or code, its priests in their infrequent preaching, always revert to the deeds of the *kami*; if cleanliness is in question, to Izanaga; if festivals, then to Jimmu's celebration of Amaterasu; if marriage, then to Izanagi and Izanami. Indeed, preaching is an institution alien to an ethnic religion, and Shintoist priests claim that Japanese should not need it, since all are by birth votaries to the *kami*. An apologist for Shintoism, A. Hirata (1776-1843) well writes "Precept is far inferior to example, for it arises only in the absence of example, while it is unnecessary when example exists."

Ethnic religions often mould the morals of the folk through dramas or mysteries. Thus the Indian *jatras*—theatrical representations in temple or home before the idols—are potent for the instruction of the people, not only as we saw above, in the amours

of Krishna with the Gopis, or the quarrels of Shiva with his spouse Kali, but in the noble devotion of Rama and Sita to each other. Or, in mysteries like those at the Greek Eleusis, votaries act out their sympathy with Demeter in her sorrow and search for Kore, not without some uplift to themselves. Such moral influences belong not to sanction of reward and punishment here or hereafter, but to those personal relations which Professor C. H. Toy properly desiderates as the now only remaining force for religious morality¹.

In the light of such instances, we can see the need to amend the thesis of Professor E. Caird that "Religion is not only a theoretical consciousness, but is always intimately connected with the practical life of man. For, as we have seen, it is always the consciousness, in some more or less adequate form, of a divine power as the principle of unity in a world, of which we are not only spectators but parts." Our instances show the gods as principles rather of morality and law, while bare unity would admit equally of law or anarchy, both of which suppose some ground of interaction. A principle of unity is ontological only, while the "obligation" which Mr. Caird seeks can be found only in the ethical. Had nature been so maleficent that the nature gods could have been conceived as predominantly vicious, man would have been powerfully impelled in the same direction, and personality, if still moral, have become as sad as any pessimist could wish.

Less specifically in reference to any nature quality in the gods, and on the other hand comprehensively of all virtues, arises the notion of sanction or guardianship by which the morality which has been learned through human experience is represented as the will of the gods. Totemism is a crude and nascent form of such sanction, and must lie near the beginnings of human culture. It prevails among Redskins, Australians, and Polynesians, as it did once among the Semites. Here a clan identifies itself with an

(1) *The Parliament of Religions*, pp. 1010-11.

animal or plant species in that the clan bears its name, considers it the clan ancestor, wears its skin or bears some mark of it, mimics its motion in dance, recognizes it in various ceremonies, at birth, puberty, marriage, and death, and will not, of course, kill or eat its kinsman, while expecting in return the like immunity from it, together with omens. All such practices belong to religion and probably the source of the system was the desire for protection from supernatural dangers through this alliance with plants and especially animals that, while akin to man, possessed powers mysteriously different from his. Such plant and animal worship does not, of course, exclude the higher nature worship and animism. Totemism touches morality in its requisition that all members of the totem-clan regard each other as brothers and sisters in rendering mutual help and protection, and in refraining from intermarriage. These are known as kinship and exogamy, and with them is usually associated the matriarchate or inheritance in the female line. The religious and social elements differ in the very important respect that the penalty of the former is left to natural disease or death, while that of the latter is commonly death administered by the whole clan. The significance of this will appear below. Thus totemism powerfully sanctions morality as conceived by people at the savage grade of culture; and as such refutes Mr. Ward's view that "No one will probably claim that the religions of savages * * * are of any material advantage to those races." Under the somewhat advanced culture of the Semites, this tribal unity was sanctioned by a god regarded as father and chief or king, with whom the sacrificial meal on the totem, then alone slain, was partaken. Thus was in part determined that monolatry and stern morality that characterized the Hebrew religion.

Another early institution known in Africa and prevalent in Polynesia, divides persons, things, and states into *tabu*, or related to the gods, and *noa*, or left to common use. To the former belong temples, priests, and the like religious objects, with princes and

nobles in virtue of their divine descent, and any one infected with death or its associated blood. These persons and things *tabu* may not be appropriated or even touched on penalty of disease or death from the gods, but also of cruel punishment by men. Furthermore, *tabu* persons may lay *tabu* upon anything else with a degree of potency varying according to their rank, with gods at the top and women at the bottom; and thus arises a moral-legal side to *tabu* which is used *e. g.*, to prohibit stealing from a prince though not by a prince, and to prohibit sexual use of betrothed girls (while the unbetrothed are free to all). Mr. Codrington who was thoroughly familiar with this institution, remarks that *tabu* "seems to the European a proof of the power of the chief; but to the native, the power of the chief in this and in everything else, rests on the persuasion that the chief has his *tindalo* (ancestral spirit) at his back. The sense of this in the particular case is remote, and apprehension of angering the chief is present and effective, but the ultimate sanction is the power of the *tindalo*." The importance of this double sanction will appear later.

In the higher barbarian and in civilized grades of culture, private or public calamity is often attributed to punishment from the gods, for some breach of a recognized morality or law. Thus in Shintoism we find a purification from ceremonial and moral pollution a necessary preparation for the reception of the divine counsel to attack Korea. In Shintoism, too, O Kuni Nushi rules the "unseen," namely, visits with calamity those transgressors that have escaped detection by the civil authority. Again, in an ancient Babylonian incantation, ceremonial and moral transgressions are united as grounds for the attacks of demons in disease. Some great god, as Marduk, is besought to loosen the band, though nothing is said of penitence. No such moral government of the world is recognized by Homer, but it appears with Theognis and other lyric poets of Greece, who blame Zeus for his impartial treatment of the virtuous and vicious. This theme is expanded by later dramatists and philosophers into an

elaborate theodicy. Nowhere was such moral government more clearly perceived than by the Chinese, as witnessed in their Shu King, containing governmental archives from the seventeenth to the seventh century B. C. Here the people are the proper object of the ruler's care, if he fulfill his duty; they are the means of his downfall, if he do not. "Accordance with the right leads to good fortune; following what is opposed to it, to bad;—the shadow and the echo." "Good and evil do not wrongly befall man, but Heaven sends down misery or happiness according to his conduct."

From this standpoint we must dissent from Mr. Kidd's view that morality depends entirely upon religion for its sanction. "Throughout its (the social system) existence there is maintained within it a conflict of two opposing forces; the disintegrating principle represented by the rational self-assertiveness of the individual wills; the integrating principle represented by a religious belief providing a sanction for social conduct, which is always of necessity ultra-rational, and the function of which is to secure, in the stress of evolution, the continual subordination of the interests of the individual units, to the larger interests of the longer-lived social organism to which they belong." Religion, then, determines morality which in turn determines progress, while intellect plays only a secondary part. But we saw that, as Mr. Frazer expresses it, "Totemism is thus both a religious and a social system," that the penalty of the former is naturally caused by disease or death, but of the latter death at human hands; that similarly in *tabu* a human penalty stands beside a natural one; that again, in China what the people exact is interpreted as the will of Heaven. When a moral code is identified with the will of a god, it does not thereby lose its binding force as morality or law. Such facts require us to consider morality, not as helpless without the sanction of religion, but like religion and the other cultural, originally independent but interacting in freedom.

Another phase of the promotion of morality by religion appears

where government is secured by belief in the divine descent of the ruler. We have already seen how the Polynesians entertain this notion, and it is known elsewhere, but the most remarkable instance is that of the Japanese who boast of their Imperial Family as by far the oldest on earth, reaching back, as it does, to about the first century B. C., when its genealogy passes from legend into the myth, according to which Ninigi no Mikoto descended from Heaven (Korea) upon a peak in Kyushu. N. Motoori, the most eminent scholar of Old Japan, wrote in 1771: "The Mikado is the sovereign appointed by the pair of deities, Izanagi and Izanami, who created this country. The sun-goddess (child of the preceding dieties and mythical grandmother of Ninigi) never said, 'Disobey the Mikado if he be bad,' and, therefore, whether he be good or bad, no one attempts to deprive him of his authority. He is the immovable ruler who must endure to the end of time, as long as the sun and moon continue to shine. In ancient language he was called a god, and that is his real character. Duty, therefore, consists in obeying him implicitly, without questioning his acts." Motoori proceeds to explain that men, being endowed by the Creative Deities with a knowledge of right and wrong, need no moral code. "It was the vicious nature of the Chinese that necessitated such strict rules" among them. This belief, though checked by the imported Confucianism and Buddhism, and latterly moribund, has left a deposit of patriotism intenser than any other on earth. China, the oldest empire on earth, likewise owes much of its stability to this notion. "As ruling over all, under the sky, the king is called, 'The Son of Heaven.'" "The Son of Heaven" forms a ternion with Heaven and Earth. When in 1859, the Hon. J. E. Ward, American Minister to China, declined an interview which would require kneeling before the Emperor, with the words, "I kneel only to God and woman," Kweiliang rejoined, "The Emperor is the same as God."

Turning now to ancestorism, we find that it powerfully seconds

naturism in promoting morality. As Mr. Tylor writes, "The worship of the dead naturally encourages good morals; for the ancestor who when living took care that his family should do right by one another, does not cease this kindly rule when he becomes a divine ghost powerful to favor or punish." While ancestorism with such beneficial effect has been quite general among mankind, its fullest expression was reached in China. De Groot agrees with Doolittle that "there are two objects of worship, as the Chinese aver, to be found in every family, namely: the ancestral tablet and the kitchen god." This ancestorism is accounted by some the chief factor in promoting the wonderful stability of the Chinese Empire, for now nearly five milleniums; and such is the conviction of the Chinese themselves. "The object of all the ceremonies is to bring down the spirits from above, even their ancestors; serving also to rectify the relations between ruler and ministers; to maintain the generous feeling between father and son, and the harmony between elder and younger brother; to adjust the relations between high and low; and to give their proper places to husband and wife. The whole may be said to secure the blessing of heaven¹." Ancestorism alone is enforced on the community by the state, so that even Mohammedans (ten millions in the Northwest of the Empire), Taoists and Buddhists, including monks, are required on pain of severe penalties, to observe obedience, mourning rites, and sacrifice to parents. Ancestorism springs from filial piety, combined with the belief in continued existence, and in turn reacts on the former factor which forms the central virtue in the Chinese ethical scheme. "How could I look my ancestors in the face, if I should consent to such a proposition?" is the reply which many an official has given to a temptation to betray his trust. And so runs the Li Chi, "Although his parents be dead, when a son is inclined to do what is good, he should think that he will

(1) *Sacred Books of the East*, vol. xxvii. p. 371.

thereby transmit the good name of his parents, and carry his wish into effect"; and *vice versa*. The moral result is a filial piety as intense in China, as is patriotism in Japan. The practice in Christendom of sons leaving the parental roof at adolescence, seems to the Chinese comparable to that of a calf with its dam; while such judges as Sir Monier-Williams and Dr. Legge admit that Christendom might learn a lesson here.

Again, religion has promoted morality by its doctrine of retribution in a future life. No doubt virtue, like beauty, is its own excuse for being; but, as every one knows, there is an impediment to virtue that is spared to beauty. Kongtze complained that he had met no one who loved virtue as he did beauty; and for such a mental condition external rewards, whether here or hereafter, are indispensable props to virtue, and by no means useless in any condition. They never conflicted with, nor even displaced the internal and nobler motive, but rather sustain virtue till it arises. The morality that we saw Babylonia sanction by temporal well-being, Egypt sanctions by the eternal kind, as is shown by the "Book of the Dead," where it instructs the deceased to disavow the standard crimes. Incitement to active virtue also is often given, *e. g.*, by the Germanic belief in a Walhalla open to warriors who fell in battle, and the similar Polynesian one in Tiairi. "The natural result of this belief was to breed an utter contempt of violent death. Many anecdotes are related of aged warriors, scarcely able to hold the spear, insisting on being led to the battlefield, in hope of gaining a soldier's paradise." Or to come nearer home, we have Kipling's tribute to Fuzzy-wuzzy, the Soudanese, also dying in hope of Paradise:

"You're a poor, benighted 'eathen but a first-class fightin' man."

We have now to inquire what influence morality has exercised upon religion. Some will recoil from such an apparent indignity offered to religion as to make her in any degree or sense the beneficiary of morality. Persons unfamiliar with culture history, and

familiar with the sanction given by current religion to morality, will expect least of all to learn that morality could ever promote religion. Such a view, however, must yield to the evidence at hand which shows on a large scale how early religion was steadily improved by an independent morality. This appears in the censure of evil gods, as of Ishtar by Gilgamesh for her cruelty, and of the Scandinavian Asas by Loki. The Greeks could not refrain from similar censure, and the like practice by Indians is implied by its prohibition in the Mahabharata. "One should neither practice nor blame the wrong acts of gods and seers." In some cases evil gods were degraded to the ranks of demons, as happened with the Germanic Loki and the Egyptian Set, and on a larger scale when the Daevas became devils among the Iranians, and the Asuras became the same among the Indians. When a god was too great to allow degradation, his votaries responded to moral impulse by suppression of objectionable traits as did Pindar; or by vindicating the deity on various grounds as does the Bhagavata Purana for the Indian Krishna. "Those beings, O King, who are beyond the reach of personal feelings have no interest in good deeds done in this world, nor do they incur any detriment from the contrary. How much less can there be any relation of good or evil between the lord of all beings, brute, mortal, and divine, and the creatures over whom he rules"? That is, since Krishna as Vishnu the Supreme, is entirely beyond the sphere of virtue and vice, how can any of his actions partake of the nature of evil? Or, again, a devout but pure-minded votary will seek spiritual allegory in the alleged misconduct of the god, as did Jayadeva who wrote the "Gitagovinda, or Song of the Shepherd," an allegory of the return of a prodigal soul to its lord, based on Krishna's return from sporting with the Gopis to his proper spouse, the glorious Radha. The incredulous smile or cynical sneer of the prosaic Westerner over the sincerity of such bold transformations will be certainly laid aside when he

peruses the noble poem. Here is a fragment from this song of songs which is Jayadeva's:

“What skill may be in singing,
 What worship sound in song,
 What lore be taught in loving,
 What right divined from wrong :
 Such things hath Jayadeva—
 In this, his hymn of love,
 Which lauds Govinda ever,—
 Displayed ; may all approve!”(1)

Again, as human virtue advances from crude forms like courage to refined ones like universal love, it transforms the gods in like fashion. Thus, Herakles passes from the rough rustic with animal force and courage, to become the patient expiator of his own guilt, and the noble sufferer on behalf of humanity. Thus Zeus became embodiment of the ideal formed by Xenophanes, Sophocles, and their peers ; and thus Vishnu, one of the several Vedic sun-gods, approximates, under Kalidasa's noble insight, the god of moral monotheism.

“The pearls are brighter than the sea, the sun
 Is in pure luster by his rays outdone ;
 So are thy deeds more glorious than the praise
 Our feeble tongues, O Lord, to thee can raise.
 What must their gain, who serve thee truly be,
 When souls are cleansed by the mere thought of thee !
 For the World's good thy mighty deeds were wrought ;
 All things are thine, and thou canst wish for naught.”(2)

Plutarch, that Christian before Christ, put the matter definitively when he wrote, “God, being perfectly good, lacks not any virtue ; and, least of all, in what concerns justice and love.” Such are some of the consummate products of that invincible moral demand of humanity for a righteous Supreme, which found classic expression by the mouth of Socrates, “If the gods do not prefer

(1) E. Arnold, *Indian Poetry*, p. 97. Those who would learn at once the impassioned faith and the exquisite poesy of the Indian mind should con this masterpiece.

(2) R. T. H. Griffith, *Idylls from the Sanscrit*, p. 99.

the good man to the bad, it is better to die than to live." When man expostulates with God on this wise, God might well become love, had he never been so before !

Morality transformed the gods generally, when it interpreted nature dualism as moral dualism, defied the evil powers it had sometimes propitiated, assigned to the good powers the predominance, and predicted their final triumph. An assimilation is nascent from the first between light, life, order, truth, justice, as it is, on the other hand, between darkness, death, disorder, falsehood, injustice. Examples of this moralization are *Bella* and *Tari* among the savage *Khonds* of India, *Osiris* and *Set* among the Egyptians, and *Ormazd* and *Ahriman* among the Persians, whence this dualism entered the Jewish and Christian religions ; while it is evidenced generally in the change from the mineral, vegetal, and animal forms to the human, by one or other of which, in myth and symbol, man has sought to visualize his gods. The change from the representation of the gods as snakes, owls, or sharks, which still prevails in Melanesia to that by the majestic humanity of the *Zeus* of *Otricoli* or the *Apollo Belvedere* was effected by morality in coöperation with other culturals.

Another great service done to religion by morality was the moralization of the future life. This at first was conceived simply as continued existence, sometimes, as among the Greeks and Hebrews, less desirable, sometimes, as with Africans, equally desirable with this life. The early vagueness and consequent indifference about the matter, were gradually removed as man grew too great of soul to limit his destiny to earth, and the condition of happiness there was gradually changed from social position to moral character. The same improvement was wrought on metempsychosis from its notion as simply change at death to the form of the animal or plant totem, to its notion as determined by conduct in this life. Especially the Indian was haunted by this form of futurity which Sir Monier-Williams declares to have been the nightmare and daymare of every Indian thinker. "For

stealing grain, a man becomes a rat ; * * * for stealing a deer or an elephant, a wolf ; for stealing a horse, a tiger ; for stealing fruit and roots, a monkey ; for stealing a woman, a bear." There is sufficient evidence that these retributions were believed ; and if so, they were powerful deterrents from vice.

Morality likewise purified the ancestorism of religion, as we learn from contemporary evidence in the Chinese Li Chi already several times referred to. "The tripods at the sacrifices had inscriptions on them. The maker of an inscription named himself, and took occasion to praise and set forth the excellent qualities of his ancestors, and clearly exhibit them to future generations. Those ancestors must have had good qualities and also bad. But the idea of an inscription is to make mention of the good qualities and not of the bad :—such is the heart of a filial descendant ; and it is only the man of ability and *virtue* who can attain to it."

Growing humanity has abolished human sacrifice, whether under naturism or animism, usually by substitution of animals or effigies. Thus the virgin sacrificed to Artemis was replaced by a doe, the boy to Dionysos by a goat. The pillar of earth erected in the Nile at its inundation, is still called the bride, in memory of its original. The Chinese stopped the similar sacrifice to the Hoang Ho in the fifth century B. C. In India, whereas in Vedic ritual we find the order, "He kills a man first * * * The cord that holds the man is longest." We soon read of the "straw man," as also of the "barley ewe," until finally, except among the Shaktas, all life, including even that of noxious animals, was spared with reverential regard. The gingerbread horse which the writer when a boy devoured at English fairs is lineal descendant of the animal once eaten in sacrificial feast by his Teutonic ancestors.

The abolition of ancestral human sacrifice among the Mongol-

ians, affords special interest because the ground is expressly stated to be humanity. Thus in the first century A. D. a brother of the Mikado having died, all those in his immediate service were buried alive around his tomb. "For many days they died not, but day and night wept and cried. At last they died and rotted. Dogs and crows assembled and ate them. The Mikado hearing the sound of their weeping and crying, felt saddened and pained in his heart. He commanded all his high officers, saying: 'It is a very painful matter to force those whom one has loved during life to follow him in death, and though it is an ancient custom, why follow it, if it be bad? From now and henceforth, plan so as to stop causing men to follow the dead.' " The plan adopted was to substitute for these human victims clay figures, of which specimens are preserved both in the Tokyo Museum and in the British Museum¹. In China as early as the sixth century B. C. we find Kongtze saying "that the making of the straw figures was good, and that the making of the wooden automaton was not benevolent—was there not a danger of its leading to the use of living men?" The humanitarianist preferred the less verisimilitude of the straw man lest reversion might set in. And a certain Khan Kan-hsi refuses to bury his father's concubines alive in his coffin, with the words, "To bury the living with the dead is contrary to propriety; how much more must it be so to bury them in the same coffin!" Finally, we see the influence of morality in that invariable trait of early rituals, the mixture of ceremonial with moral elements, and in the removal of both by mechanical means, which in course of mental development later become mere symbols of a moral process which really purifies. Such religious functions as sacrifice and prayer pass through similar changes.

So long as one considers morality as steadily developing or as permanently good, it could hardly be said ever to deprave religion;

(1) *Transactions of the Asiatic Soc. of Japan*, vol. viii. part 3. p. 328.

but when one regards its crude almost unmoral rise and its retrogression among some peoples, it is easy to see how in either case it could injure religion. The most notable instance of this relation is the fetishism prevalent in Africa and Australia, according to which spirits are believed to be resident in certain things—stones, sticks, claws, teeth, feathers, almost anything out of the common—which are then worshiped; and, if found potent, retained, but otherwise abused or discarded. All recent scholars agree that this is no original phase of religion as De Brosses supposed; and most scholars—Müller, Pfeiderer, von Hartmann, Siebeck, Menzies, and Lang—regard it as a degeneration. Certainly its egoism towards men and irreverence towards gods at least allow that view, while its association with decay in other cultural favors it.

The evidence will not support the view which has been entertained by some, that all human sacrifice to the gods was based on an analogy of cannibalism by man; but it does clearly show that much was so suggested, while its practice, usually with captives and in honor of war-gods, indicates the exigencies of war in famished warriors inflamed with mad rage against their foes as one chief occasion, while in other cases the motive was thus to absorb the courage of the fallen foe. The instance at the same time best evidenced and most atrocious is that of entire Polynesia. Here at the time of its discovery the mere cannibalism had disappeared in many places where it still prevailed, for the whole or part of the body, in connection with human sacrifice to gods, who furthermore were believed to devour the souls of the dead. The Gonds of India were previously cannibals and also offered human sacrifice, for which they now substitute a straw man. In Mexico the human sacrifice at the annual festival to the water and mountain gods, was accompanied with the eating of paste human effigies, at the homes of the people. Here too, therefore, cannibalism probably suggested human sacrifice. For Teutonic cannibalism there is no further evidence than the using the blood of the

victim, which had been caught in kettles by the sibyls for mixing cakes. The direct depravation of religion by lust appears in two remarkable cases of departmental deities, one in Tahiti where unnatural criminals have devised a patron deity, and another in Hinduism where the eight Nayikas or Mistresses are simply personifications of unlawful sexual relation.

In drawing this survey to a close, we may notice that while morality and religion have each wrought mischief enough on each other, their mutual help has so far exceeded this mischief that we may regard it as less only than indispensable. While an independent growth of each is conceivable, it certainly never happened; and if it had done so, must have been with loss to both sides. Finally, the narrowness of our thesis needs complementation from other sides of human culture. If religion has promoted morality, it has also promoted industry, knowledge, and art; the knowledge, alas, with even more offsetting hindrance than in the case of morality. But it has promoted the growth of all culturals, and should be credited with so doing. Many, of whom Mr. Matthew Arnold may serve as the type, forget this. It is strange that the prophet whose eloquence roused his commercial compatriots to "the sense for beauty, the sense for conduct," did not proclaim that "the power not ourselves that works for righteousness" works also for beauty, as, indeed, for ever fuller knowledge, and even for humble industry. God is no more judge than he is inventor, scientist, or artist. If he is angry with the wicked every day, he must also admire the explorer and delight in the sculptor. But it is not the chief function of religion to promote anything. If beauty is its own excuse for being, and if virtue is its own reward, surely religion, too, has intrinsic value. It is not true that "The essence of religion lies in conduct," though the prevalence of the error is wide. Rather has religion the unique function of making man at home in the world, of giving him an Absolute and Perfect Person in whom he can trust. We hold with Schleiermacher "That piety

springs necessarily of itself from the bosom of every better soul, that there belongs to it a particular province in the heart where it rules without bounds, that it is worthy to enliven by its innermost force the noblest and grandest men, and to be accepted and recognized by them according to its innermost nature." In the same spirit C. P. Tiele declares that religion "occupies too exalted a position to act the part of a mere censor in society or a mere policeman in the state"; and A. Reville that "Former definitions have been complicated by the too frequent desire to make morality religion's point of departure or essential element."

Conversely, the service of morality to religion has been complemented by that of all the other cultural, notably by enlarging knowledge. This service argues no less divinity in religion, except on the atheistic assumption that industry, knowledge, art, morality, and law are secular and undivine. Rather should we hold with England's late laureate that

"God fulfills himself in many ways,
Lest one good custom should corrupt the world,"

and similarly that man when at his best is neither all religious nor without religion. Such was the consummate character of Brutus:

"His life was gentle; and the elements
So mixed in him, that Nature might stand up
And say to all the world, 'This was a man.'"

The freedom of these cultural from bondage to each other is prerequisite to their fullest and best influence upon each other, and not less to concord between them. The interaction between them will be in no wise jeopardized by such freedom, since it is amply secured by the indestructible unity of the Self.

POLITICAL PARTIES AND CITY GOVERNMENT

FRANK J. GOODNOW, *Columbia University.*



THE most recent serious treatise on American Municipal Government, namely, that of the late Mr. Dorman B. Eaton, entitled "The Government of Municipalities," is in large part devoted to a description of the evils which are due to the interference of the state and national political parties with city government. The contention so powerfully voiced by Mr. Eaton is one in whose truth more and more persons have, within the last quarter of a century, become convinced. In many of the cities country clubs and associations have been formed, whose principal article of belief has been the divorce of national political parties from city politics. Indeed, the most notable association of those who are interested in municipal reform in this country, namely, the National Municipal League, is based upon this platform.

The arguments which have as yet been advanced in favor of the separation of municipal government and national politics have been largely confined to a demonstration of the absurdity of the connection, for example, of free trade or protection with the cleaning of the streets or the adoption of any specific policy with regard to distinctly municipal matters. Great emphasis has been laid upon what has been termed the business character of municipal government as distinguished from state and national govern-

ment. The city has been compared to a private corporation. Municipal voters are regarded as in very much the same position as corporate stockholders. The corporate organization is said to offer an example of a proper municipal organization.

The remedies which have been advocated, and in some instances applied, in order to do away with the interference of political parties in municipal government, may be classed under two heads. In the first place they are of a political character; that is, they attempt through exhortation and political agitation to convince the voters in the cities of the propriety of what is called "non-partisan municipal government." Attempts are made on the occasion of municipal elections to organize distinctly municipal parties which attempt to get control of the city government. Such attempts have, however, seldom been successful, except where the conditions resulting from the mal-administration of the political parties have been so bad that the necessity of a change was quite apparent. The reform movements which have been successful have seldom been permanent. They have usually been followed by an immediate return to the political conditions which existed prior to the reform campaign.

The other class of remedies has consisted in the attempt by legislation to separate in the minds of the voters municipal from state and national issues. The most important instance of this class of remedies is to be found in separate municipal elections. Separate elections seem to have been productive of a certain degree of success; indeed, it has been largely due to such separate elections that the reform movements to which reference has just been made have owed their success.

Apart from the cultivation of a public opinion upon the subject, it cannot be said, therefore, that the movement in favor of a separation of city government from national politics has been accompanied by great success. The city governments are almost everywhere in this country conducted by the national parties. City elections are in almost all cases fought out on party

lines. The local leaders of the national and state parties are powerful influences for good or for evil in municipal government.

This comparative failure is much to be regretted. For while it is true that the evils due to the interference of political parties with municipal government are probably much exaggerated, at the same time it cannot be denied that greater progress in the improvement of municipal conditions would probably have resulted, if the city populations had been free to consider their own welfare uninfluenced by the political necessities of either the state or the nation. American cities have from the beginning of their history been sacrificed in the interest of the nation. The problems of our national politics have been so important, involving our very existence as a nation, that the entire political capacity of the people was required for their solution. Local interests had to be sacrificed in the interest of our national life. It was only after the solution of these questions of supreme importance, that attention could be directed to the more local, and from the highest political point of view, the less important questions connected with municipal government. It was as a matter of fact only after the solution of the great questions of national politics, which was made by the Civil War, that the municipal problem came to be considered of importance. It was only after the war had been carried to a successful conclusion by the advocates of an undivided nation, that this demand for the separation of municipal government from national parties came to be made even in an academic way.

Within the last quarter of a century, however, the growth of urban communities has been so great that questions, which, prior to 1870, were matters of comparative unimportance, have now become of supreme importance. The large proportion of our population which live in urban communities makes it necessary that if our political development is to be satisfactory, urban conditions must be very much improved. What has been said must

not be understood as belittling the progress which has already been made in the improvement of urban conditions. No greater mistake can be made than to exaggerate the evil conditions which exist in American cities. The progress that has already been made is very great. Fifty years ago efficient police protection was almost unknown. Few, if any, of our cities had ample supplies of potable water. No effective provision was made for cleaning the streets, or for taking away the *débris* occasioned by the exigencies of urban life. The pavements of our cities were generally wretched in character; and the means of transportation offered to the urban population was altogether inadequate. Much of the improvement that has been made in these respects within the last half century has been due, of course, to the development of scientific methods; but the improvement which has actually taken place would not have been possible had our city governments been as bad as they have sometimes been represented.

At the same time the universal dissatisfaction with prevailing municipal conditions and the frequent changes that are made all through the country in the details of municipal organization would seem to indicate that, notwithstanding the improvement that has been made, it is believed that this improvement has not kept pace with the improvements in science which have been characteristic of the latter half of the nineteenth century. The continually increasing strength of the belief that the interference of national parties with municipal government is productive of evil, is sufficient warrant for the assumption that in this interference is to be found a cause, at any rate, of our lack of more rapid improvement; and a sufficient justification for an investigation into the means by which this interference may be effectually removed.

Assuming then that one of the causes of what we are accustomed to call the evil conditions of American Municipal Government, is to be found in the interference therein of the state and national political parties, the question naturally arises why it is that these

parties desire to interfere in a matter with which it is frequently assumed they should have no connection. The reasons why political parties desire to busy themselves with municipal politics are two in number. In the first place a political party is formed for the accomplishment of certain ends. These ends are not accomplished unless, in the first place, a law is put upon the statute book which, in the second place, is actually enforced and becomes a rule of conduct generally observed by the citizens of the state. Now if the position of the city is such that it has an important influence upon either the making or the enforcement of law, it will naturally follow that the political party will interest itself with the government of that city. This naturally brings us to the question: Is the position of the ordinary American city such that it does have an important influence upon either the making or the enforcement of law?

It is popularly supposed that the city in our American Law is an agency formed for the satisfaction of local needs; that its influence is thus purely local, and that its affairs concern only those who reside within its limits. This popular conception of the position of the city is, however, an erroneous one. The city is, it is true, an organization for the satisfaction of local needs; it is to the city government that the people of the city have to look for their water supply. They must in like manner look to it for protection against fire, for cleaning the streets, and for action as to a number of matters in which it can be said that the people of the state have little if any interest.

The city in the United States is, however, much more than an organization for the satisfaction of purely local needs. It is usually entrusted with a long series of functions whose performance interests most vitally the people of the state as a whole. Thus, as a general thing, the management of elections, even for state officers, is vested in election officers appointed by the city government and acting under its control. These officers superintend the registration of voters and the casting of the votes, and

count the vote after it has been cast, whether the election is for city or for state and national officers. The city's voting population is so large, that any fraud or inefficiency upon the part of its election officers may influence the results for state and national officers. The people of the state and nation are, therefore, vitally interested in the impartial, efficient, and upright performance of their duties by these election officers whom we are accustomed to speak of as city officers.

Again, the state passes general laws operative throughout the entire state which embody some policy which has been advocated by the political party in control of the state government. The enforcement of these laws is, under our system of government, entrusted to the local authorities; and the city being a local authority is relied upon to enforce them within its limits. If the city is not under any effective state control it may or may not enforce them as it sees fit. As a general thing our system of administration is so decentralized that the city is not in the enforcement of such general laws subjected to an effective state control. It therefore follows that where the local public opinion with regard to the propriety of a law does not coincide with the public opinion of the state as a whole as expressed in that law, the law is not enforced in a particular city.

The most notable instance of local failure to enforce state laws is to be found in the case of Prohibition and Sunday Closing Laws. The enforcement of such laws is usually entrusted to local police officers who are under the control of the city government. A political party which has put upon the state statute book a law providing for the prohibition of the sale of liquor or for the closing of saloons on Sunday, would be recreant to its principles if it did not strive, so far as in it lay, to get control of the city government in order that it might provide for the enforcement of such law in the city, through the control which the city government has over the local police.

Examples of this sort might be multiplied, but it is hoped that

what has been said is sufficient to show that the city is, in the enforcement of state laws, not acting alone in its own interest, but is, on the contrary, an agent of the state government, and that if the city is not subjected to an effective state control the state political party will, in the nature of things, desire to control its government.

What has been said is indicative of one of the remedies, at any rate, which must be applied if we are to hope that the political parties will not interfere with municipal government. Municipalities when acting as agents of the state government must be subjected to an effective state control. If the state government has such a control over the city government in the interest of the enforcement of general state laws, the desire of the political party to secure the enforcement of the law will not of necessity lead it to endeavor to get control of the city government. The party may secure the enforcement of state law through its control of the state government.

Up to within comparatively recent times the only attempt which was made to exercise a state control over the city government was through the passage of more or less detailed and special legislation. The failure of a city to enforce general state laws was usually followed by a more detailed statute which elaborated the duties of city officers and threatened them with punishment in case of their failure to perform them. Inasmuch, however, as the punishment for crime was very largely in the hands of local courts and local juries, this attempt to exercise a state control over the local enforcement of state law was a failure. The failure to enforce prohibition laws was so marked, and the belief so strong that the local jury was to blame for it, that some of the prohibition laws provided for what has now come to be known as "government by injunction." That is, the courts were given the power, in case of the illicit sale of liquor, to enjoin its sale; and a violation of the injunction was punishable as contempt of court without the necessity of presenting the case to a jury.

In some instances the conviction that it was impossible to secure the enforcement of stringent liquor laws through uncontrolled local action was so strong that the control of the police, to whom the enforcement of such laws was entrusted, was taken out of the hands of the local authorities and given to a police commission to be appointed by the central government of the state.

Neither of these plans of securing the enforcement in the localities of state laws can be regarded as successful. The greater elaboration of the legislative control was naturally a failure. The local influences were, notwithstanding the greater stringency of the legislation, too strong to be overcome in this way. The assumption by the state of the power to enforce its own laws is so contrary to our ideas of propriety in governmental matters, that the plan has always met with serious opposition and when adopted has not always been successful.

The attempt, however, has been made within the last twenty-five or thirty years, at first in a very modest way, to provide for a central administrative control over the enforcement of state law, although the enforcement of such law is, at the same time, left in the hands of the local authorities. This method has been adopted most commonly throughout this country in the case of the educational administration. As the necessity for education has been brought home more effectively to the minds of the people, a state officer, known as the superintendent of schools, or called by some similar title, has been provided, to whom power has been given to inspect the schools. These still have been maintained in part by the localities, and, as a general thing, have been primarily under local management. In case the state inspection revealed a failure upon the part of local bodies to carry out the law, the state school authority was permitted to refuse to award the local bodies the quota of the state moneys to which, in case they conformed to the law, they were entitled, or to take other measures of a more drastic character in order to insure the observance of the state law by the local school authorities.

Similar methods have been applied in the sanitary administration. In several states, State Boards of Health have been appointed which have powers of control over local Boards of Health similar to the powers which the State Superintendent of Schools has over the local school authorities. Charities and penal institutions maintained by the localities have been treated in the same way.

The central administrative control, which has been substituted for the former legislative control through special and detailed legislation, has in the first place proved to be an effective control. The great improvement which has been made in our schools in the last twenty-five years is largely due to its existence and exercise. Similar improvement in the conditions of our charitable institutions has followed the establishment of State Boards of Charities.

Further, if exercised with tact, this state administrative control is not so liable to encounter local opposition as is the direct state enforcement of state law. The immediate management of what have been considered as local matters is left in the hands of local authorities. Accompanied as this method of control is frequently by the grant of state moneys, the lessening of the local expense, which will result from conformity to state law, does much to reconcile the localities to the performance of duties which otherwise would be unwillingly performed.

This effectiveness of the administrative control in securing the local enforcement of state law without arousing serious local opposition, removes at once one of the reasons for the interference of the political party in city government. If the local enforcement of state law is subjected to the supervision and control of a state administrative officer, who is himself under the control of the state legislature, it will not be necessary for the state political party to interfere with municipal government. The party can accomplish what it wishes through its power over the state government, since the state government has an effective control over the city government.

The central administrative control is, further, not so liable to be made use of for partisan political reasons as the legislative control. The legislative control is exercised by a body which is naturally governed very largely by political considerations. There is no body in the government which is of necessity governed by political considerations to the extent that the Legislature is. This is as it should be. The great questions of state policy are expected to be fought out in the Legislature. Therefore, if we are to hope that the control which is to be exercised over localities is not to be exercised for political reasons, the Legislature is the body by which it should not be exercised.

We may then assume as theoretically probable that the establishment of an effective state administrative control in the place of the present ineffective legislative control over cities, will reduce the desire of political parties to interfere with municipal government. We may also assume that such an administrative control will not be so apt to be made use of for political reasons as is the present legislative control. If space permitted it might easily be shown that what was to be expected from the point of view of theory, has resulted in actual practice from the substitution of this central administrative control for the legislative control. One of the most marked characteristics of English administrative development within this century has been the renunciation by Parliament of its power over the details of local administration, and the establishment of an effective central administrative control over the actions of the localities where they are acting as agents of the state government. For example, in the old times English cities had to obtain the consent of Parliament by special act to borrow money. Now that power is granted once and for all by the General Municipal Corporations Act, but its exercise is conditioned upon obtaining the consent of the Local Government Board, an administrative authority of the central government.

The national political parties of England as compared with the national parties in the United States hardly concern themselves

with municipal government. That is, while members of English city councils may have been elected nominally as the representatives of the national parties, they discharge their municipal functions with reference to the needs of the city for which they act, and with little if any consideration for the effect on national party politics. Similar results have followed the establishment of the central administrative control in this country. The establishment of a central administrative control in the educational administration has resulted in the diminution of the influences of politics in the school administration. The same result is noticeable in the administration of public charities. Legislative control encourages the development of political influences ; administrative control discourages it.

The establishment of such a central administrative control will not, however, be sufficient to cause the political parties to retire from municipal politics. It does, it is true, diminish their legitimate desire to interfere with city government, inasmuch as it makes it possible for them in other ways to secure the enforcement by the cities of general state laws. But the political party interferes in municipal politics for other reasons less legitimate. The building up and keeping together of a political party in this country is a very difficult undertaking. The work of a political party is very great on account of our unconcentrated system of government, our decentralized system of administration, and the vast number of officers who are to be chosen at each election. To do this work the party must have a very strong organization which must also be reasonably permanent. The building up of such an organization requires resort to all means at hand. No means is more efficient than that afforded by the city governments with their large patronage, their profitable contracts, and the franchises, which with the development of municipal transportation in all its branches, have become of late years so important. So long as the law and public opinion permit these matters to be treated from any other point of view than that of the public

interest, so long will the political parties have an enormous interest in the control of the municipal government. The only way in which this source of the desire of political parties to control municipal government may be removed, is through the adoption of the most rigid Civil Service Laws, which shall provide a merit system of appointment, and of methods of awarding contracts and granting municipal franchises which shall, so far as law can accomplish such a result, insure their awarding in a perfectly impartial and proper manner.

As law without public opinion back of it is of little avail, the mere passage of such laws as have been referred to will not, of course, accomplish the desired result. At the same time the passage of such laws does much to form or strengthen public opinion and marks one step in the right direction.

Further, in order that the attention of the municipal voters may be concentrated upon municipal issues, provision must be made, as has been done already in many instances, for separate municipal elections at which municipal officers alone shall be voted for. Such separate municipal elections, however, will be ineffective in concentrating the attention of the municipal voters upon municipal questions, if the municipal organization is not sufficiently simple to permit the voter to see exactly what his vote means. The powers of the city and its organization should be such that the voter should be able to know when he votes, that the persons he votes for are able to put a specific policy into operation within a reasonable time. The positions to be filled at an election should, therefore, be as few in number as possible; for where there are many to be filled, the personality of the candidates gives way before the responsibility of parties, and the parties which will take the matter in hand will be the regular state and national parties, which for state and national interests must keep up a permanent organization, and are thus always at hand to take up the work.

If all of these methods were adopted, it would not necessarily

follow that the state and national parties so far as municipal matters were concerned, would be replaced by distinctively municipal parties. It is, however, to be expected that in such a case the state and national political parties, if they did not in their local organizations adopt a definite municipal policy, would ultimately be driven out of municipal politics. The result that would probably follow, however, would be that the local organizations of the national parties would adopt a municipal policy. Whatever might happen, however, would be a matter of indifference. What is needed is not so much the expulsion of the national party from municipal politics, as the ability upon the part of the people to consider municipal issues which have grown so enormously important within recent years, from the point of view of the interest of the city alone, uninfluenced in any way by the interests of the state or nation.

To sum up our conclusions it may be said, that the influence of national parties upon municipal government in the United States may be eliminated in the following way :

In the first place, the state should establish an effective central control over the actions of municipalities, so far as they are acting as state agents.

In the second place, laws should be passed and an enlightened public opinion should be cultivated which would prevent the national and state parties from making use of municipal patronage, contracts, and franchises in their own interest.

In the third place, the municipal organizations should be so simple and the powers of municipal authorities should be so great, that the municipal voter should be able to know at the time he casts his vote that the persons for whom he is voting are able to carry out within a reasonable time a municipal policy which had been under consideration.

The adoption of such measures as have been outlined would of necessity involve quite a change in our general administrative system. It is believed, however, that the attention of American

municipal reformers has in the past been too closely confined to the question of municipal organization and has not been sufficiently directed to the position which the city occupies in the general scheme of state government. Only after a correct understanding of the position of the city has been reached, and an intelligent treatment of its relations from the point of view of its position has been undertaken, can great hope of obtaining the most satisfactory conditions in our municipalities be entertained.

CORRECTION. Page 618, line 12, insert, after cities, "of this," so as to read, "In many of the cities of this country, clubs and associations have been formed."



RECENT ADVANCE IN MEDICAL SCIENCE

REYNOLD WEBB WILCOX, M.D., LL.D., *New York.*



THE title of this paper assumes that medicine is a science. Even the most captious critic must admit that Bacon's designation of medicine as a conjectural branch of physical science, has become more and more untrue as each succeeding decade has witnessed the rapid increase in the number of well established facts. An intelligent appreciation of these facts and careful application of inductive reasoning, make the probabilities of the successful treatment of disease immeasurably greater. If medical science has not reached mathematical exactness,—and at present we cannot make that claim,—it is that the unknown has not been extinguished because of the limitations of the human mind and imperfections of physical research. The domain of the unknowable in medicine is being rapidly circumscribed, and that of the unknown slowly but surely blotted out. When every department of science has reached the goal set up by its devotees, then medicine will enjoy the perfect fruition for which all scientific physicians are working with untiring zeal. The reproach is often brought against physicians that their practice has not made the great advances which surgery has achieved, and, to the mind of the unreasoning public, there seems justice in the charge. The facts are here obscured by the popular conceptions of medicine and surgery. In truth the latter, being mostly mechanical,

appeals to the observer as being more subject to physical laws, and, in the event of a recovery from an operation, more successful. To this imperfect view is opposed (1) That surgery is in essence subtractive and the whole from which a part is removed is never cured, for there can be no *restitutio ad integrum* which is the aim of the physician. (2) That the operation is the gross mechanical solution of a portion of the problem; the remainder, often of far greater importance, being still within the province of the physician. Besides, the subjects of anæsthesia and antisepsis, upon which surgery must base its greatest achievements, are distinctly medical problems. The relation of medicine to surgery is precisely that of the statesman to the soldier. The former incites the latter to action, and when the conflict is over, gathers the fruits of victory or endeavors to lessen the consequences of defeat. As the soldier is the more conspicuous and receives the plaudits of the throng, so the surgeon and his work appeal more strongly to the public. With this determination of field, let us briefly recount what the physician has recently done toward increasing human well-being.

For the past few years, Boards of Health laboring under exaggerated notions of their own importance, endowed with knowledge in inverse ratio to their pretensions, have become hysterical on the subject of the contagious or infectious diseases. The pseudo-scientists in their employ, basing their claims upon bacteriology alone, have made statements which contain so little truth, that they have been ignored by the scientific physician, but, possessing just enough resemblance to fact, they have kept communities in continual alarm. In some instances, their unproved and unprovable allegations have been incorporated into the organic law of the state. This is especially true of the needless legislation concerning pulmonary tuberculosis. In this prevalent mingling of a small amount of fact in a vast tumult of fancy, the scholarly paper of Thomson is timely. The notion of spreading by contagion is spreading by touch, assuming a continuity from a patient

afflicted with a certain disease to another person. If other diseases did not apparently arise from contact with previous cases, then it was assumed that there was no relation between them and the contagious diseases. Therefore, if in a community a disease appeared in those who had had apparently nothing to do with the sick, it was assumed to be non-contagious. That there might be, between these two classes, a difference of form, but not of kind,—a difference in mode of contagion, but not in fact,—may have been suspected, but the miasmatic theory of their origin was too seductive to be lightly cast aside.

To meet the suggestion that certain diseases, like cholera, had something to do with human intercourse, the term “infectious” was applied. This, instead of clearing up our conceptions, only increased the confusion, for it can be applied to contagious and miasmatic diseases as well as to those which are neither. It was, then, owing to this vagueness of terms and vagueness of ideas that so much alarm has been needlessly excited. As soon as the profession understands the nature of the disease, the method of limiting that disease becomes evident. As soon as the people are taught the reason for doing something, and how to accomplish that something, the end is easily reached. The question of consumption is readily disposed of can we but make its true position clear. Boards of Health assume that pulmonary tuberculosis is infectious, that is, one may become infected through occupying a room previously inhabited by a tuberculous patient, as a person may likewise become the victim of malarial fever from entering a malarious locality. As a matter of fact, the one is as contagious as the other, and no educated physician claims that malaria fever is contagious. Here it is evident that language has served only to confuse the ideas of official medicine. The revolt of the people is against laws based on statements absolutely opposed to observed facts; and the brutality towards the unfortunate victims of tuberculosis has led to the discredit of scientific medicine, when only the venal and ignorant exponents of half-digested theories are at fault.

The proposed classification should be prefaced by the following statement: "All diseases due to the presence of their specific living micro-organisms in the body are 'infectious,' hence, this term should cover them all." Therefore, owing to their nature all infectious diseases are communicable from the sick to the well, but their ordinary modes of communication differ so that they can be classified accordingly, thus: Communicable diseases are: (1) The contagious; (2) The non-contagious; (3) The inoculable.

(1) The contagious communicable diseases are those in which simple *proximity* to the infected is sufficient to communicate the infection to those susceptible to them. Examples of this class are typhus fever, scarlet fever, smallpox, measles, diphtheria, mumps, whooping-cough, and so forth. The practical deduction from this fact is, that isolation is needful to prevent infection.

(2) The non-contagious, communicable diseases are those in which the communication is not by simple proximity to the sick, but through *intermediate means of communication*. Insolation therefore, is neither needful nor effective, in comparison with measures directed against intermediate means of infection. Examples of these diseases are typhoid fever, Asiatic cholera and tuberculosis.

(3.) The inoculable diseases are those in which the infection has gained entrance through a wound, or damage,—by inflammation or otherwise,—of the skin or of a mucous membrane. Examples of these are surgical infection of wounds, erysipelas, hydrophobia and tetanus. To this class recent researches seem to make the great addition of what hitherto has been called the malaria infection. Lastly, all infectious diseases can be prevented by measures of disinfection applicable to each.

If we understand infection as being always due to a living micro-organism as its primary and essential element, all vague ideas of a relationship to poisonous chemical, physical, or atmospheric, instrumentality will yield to more correct conceptions of

both infection and disinfection. The term *communicable* is well chosen, because it impresses upon the mind that no instance of a particular disease can arise save by communication, while contagion implies proximity. In exterminating tuberculosis, if every consumptive patient understood that this disease did not come to him from air, water or earth,—though perhaps by all three,—but originally from another consumptive, then he and his friends could take measures to prevent further infection. This can be done without offending the sensibilities of the patient or denying him any of the comforts of home care. The term “contagious” should be applied to those diseases which are so directly communicable that mere nearness is sufficient. As for the term “inoculable,” the popular conception is sufficiently accurate and widely known. The bearing of recent and important findings as to the rôle of the mosquito in inoculating the parasite containing malarial fever, will be fully presented in this review. This valuable contribution to medical science is summed up in the *American Medical Quarterly* for January of this year, as follows: “All diseases caused by the presence of micro-organisms in the body are infectious, and therefore communicable in one of three ways. (1.) Communicable directly as by simple proximity, and therefore contagious. Chief preventive, isolation. (2.) Communicable not directly, but by carriers, not contagious. Chief prevention through dealing with the medium by which they are carried. (3.) Communicable by inoculation. Chief prevention by dealing with the thing which inoculates.”

Nothing is too insignificant for the study of the physician: therefore the mosquito has received sufficient attention to show that it is something more than an annoyance. That mosquitoes and other insects bear causal relation to the spread of malaria and possibly other fevers, is a belief said to have been held by the Romans. The exact relation of the mosquito to malarial fever in man is now an ascertained fact through the painstaking work of Manson, Ross, Grassi and Bignami. It is known that the mosquito

is the definitive host of the malarial parasite. Without recounting the long-continued experimentation, it may be stated that Ross found that mosquitoes who had stung birds in whose blood the malarial parasite was found, and who were then fed to other healthy birds, communicated the disease to the latter. Bignami furnished proof that the theory of inoculation is correct by citing an instance of a man, who had been under hospital care during six years for a nervous affection, being repeatedly bitten by female mosquitoes imported from a malarial district, developed malarial chills and showed malarial parasites in his blood. Other observations show that mosquitoes can in turn become infected from human beings suffering from malarial fever, thus completing the cycle. Of the *culicides* the most common *genera*, are *culex* and *anopheles*, the former more plentiful in towns and villages, the latter in rural districts. Their *larvæ* are readily distinguishable in that while both float upon water, the latter floats flat like a stick and not head downwards as is the case with the *larvæ* of *culex*. *Anopheles* is, so far as is known, the only one containing malarial parasites, and the only bearer of malarial infection. To controvert these facts, but one argument has been advanced: namely, the infection by the mosquito being the only method of infection besides artificial inoculation for experimental purposes, this theory fails to account for malarial fever attacking explorers previously free from fever who enter uninhabited regions. The explanation is undoubtedly to be found in the suggestion of Davidson, that other animals may take the place of man as the host. The practical application is, that patients suffering from malarial fever and who remain in a malarial district, must not only be cured, which is readily enough done by the scientific use of quinine and other drugs, but must be protected against re-infection; that is, the mosquitoes must be exterminated. To exterminate the adult mosquito would be an unending task: that the *larvæ* can be markedly diminished is plain. (1) The collections of water, ponds, ditches, tubs, can be drained every few

days (the *larvæ* require about a week to mature in the water); (2) When this is impossible, as in the case of sluggish streams, fish, especially minnows, which feed upon the *larvæ*, may be introduced. If neither method is practicable, then (3), petroleum may be floated upon the surface of the water. According to Howard, one ounce spread over fifteen square feet of water will destroy or prevent the subsequent development of *larvæ* for, at least, two weeks.

Psittacosis, an infectious disease in birds, particularly in parrots, and transmissible to man, has for its probable cause a bacillus, first described by Nocard, which bears some resemblance to that of typhoid fever. In birds, the symptoms are wasting, diarrhoea and other digestive symptoms, and a loss of feathers. In man, the symptoms resemble those of typhoid fever. Nicolle reports an epidemic attacking eight persons of whom four died. Doubtless other diseases may be communicated from domesticated animals.

That there exists both a natural and an acquired immunity to disease is well known. What constitutes this immunity, and how it is brought about, are still unsettled questions. That individuals can become accustomed to poisons is a matter of everyday experience, and Mithradatism has been known for centuries. Besredka finds that by giving fractional doses of sodium arsenite to rabbits, their leucocytes (white blood corpuscles) become accustomed to its presence. The blood serum of these immunized animals possesses preventive and antitoxic properties against a quantity of arsenous acid which kills in forty-eight hours. The substance formed in the blood of immunized animals is probably a non-arsenical compound. Quite similar was the work of Ehrlich, who showed that the antitoxins (antiricin, antiabrin) may be produced in the blood by successively increased doses of ricin and abrin. Maramaldi applied the same line of reasoning to alcohol. Increasing doses of ethylic (ordinary) alcohol, well diluted, were administered to dogs through an œsophageal tube until tolerance was established for a larger than

an ordinary lethal dose. The blood serum of these animals was employed in the experimentation. His conclusions were: (1) It is possible to confer a real immunity to dogs by administering progressively increasing doses of this poison, ultimately reaching very large doses without producing functional disturbances or organic degenerations; (2) The serum of such a dog rendered immune to alcohol, contains a special antitoxin, capable of neutralizing the toxic action of a dose of alcohol one-fourth larger than the minimum fatal dose; (3) Normal blood-serum does not possess the power of augmenting the organic resistance to alcohol, much less does it explain the curative action in acute poisoning. From these observations, we come to the subject of acquired immunity in infectious diseases, and immunity here implies resistance against both bacteria and the products of their activity. This immunity may be acquired: (1) By recovery from an infectious disease which for a longer or shorter period removes the natural proclivity to this disease; (2) By inoculation with an attenuated virus, as practiced in ordinary vaccination. (3) By introduction of small doses of living and fully virulent organisms,—a measure whose danger can not always be previously estimated; (4) By chemical vaccination with metabolic products of living bacteria. It is in this last method that study has of late been chiefly directed. Following Behring we must distinguish between an active immunization (treatment with toxin) and a passive immunization (treatment with antitoxin), although both may be carried out to insure immunity. With regard to the latter method considerable work has been done. Morrill determines the duration of immunity to diphtheria conferred by a single injection of antitoxin, as follow: (1) Immunity in any given instance of no matter how thorough exposure to diphtheria, may be conferred for at least ten days, by the injection of a small dose of serum provided it is given twenty-four hour previous to actual infection. (2) A larger dose will confer safety for twenty days under similar conditions. No harm will result from the

treatment in the vast majority of sick children, and probably in no case of a healthy child, provided the serum is pure. The problem is even simpler according to Zahorsky, who has successfully employed antitoxin by the mouth for the purpose of immunization, having demonstrated that it is absorbed after thirty-six hours. Yet this experience is entirely at variance with the observations of Carriere who showed that the digestive ferments and intestinal organisms decompose antitoxins, so that when so introduced they are useless. Inasmuch as immunization is properly within the province of the physician, it is well that the subcutaneous method should be employed. At best, passive immunization is temporary. In what way the organism protects itself against infectious diseases, can not be definitely stated. However, some light has been thrown upon the question by Manfredi, who found that the lymphatic glands might retain for long periods of time limited numbers of microbes, of greater or less virulence, without any symptoms either of local irritation or of general systemic disturbance, but that these micro-organisms gradually lost their virulence, and possibly this may be one way of acquiring immunity. The liver apparently hinders general infection through its endothelial cells. The digestive ferments have already been mentioned, as destructive to antitoxins; they are equally inimical to the toxins. Evidently our ancestors were not far wrong in ascribing great importance to the proper functioning of the liver and alimentary tract, although, in reasoning from cause to effect, we have brought about an entire substitution of terms. As curative agents the antitoxin neutralizes the toxin by uniting with it to form harmless chemical compounds (Cobbett), and this may be extended by noting that toxins behave quite similarly with certain ferments. While this combination is a chemical one, it takes place somewhat slowly. Inasmuch as many infectious diseases are complicated by secondary infections of quite as much if not more importance than the primary, much effort has been expended to produce a polyvalent

serum, that is, one curative of two diverse infections. Much as this may be desirable, not only in cure but in prophylaxis, nothing of value has resulted.

The Röntgen rays have afforded considerable aid in diagnosis of medical diseases. The later conclusions are those of Walsham that they are valuable in discovering tuberculous lesions at the apices of the lung, in detecting pleuritic effusions, and in determining consolidation of the lung and pleuritic adhesions. As a matter of fact, this author is not entirely correct, for by far the most important point determined is the limitation of the excursion of the diaphragm on the one or the other or both sides, which gives a clue to the location of disease which should be demonstrated by other methods of physical examination. A curious observation of Ottolenghi confirms a previous statement of Bougardes that dead lungs are more opaque to the rays than living ones, and show darker at the borders. But inasmuch as these differences are not well marked until decomposition begins, this cannot be regarded as a very valuable sign of death. The most important point of the year, in diagnosis, has been brought out by Beck, who, in spite of previous failures made by himself and others, has succeeded in radiographing gall-stones, not only situated in the bileducts, but in the liver as well. He has shown that success depends upon the varying composition of these stones, and consequently, on their greater or lesser opacity, and further, that the time of exposure must be carefully regulated. Of gall-stones, those consisting of pure cholesterin give but an indistinct shade, while those containing lime are well appreciable. Owing to the difficulties in diagnosis by the usual methods, these observations are of great importance. In tumors of the brain successful localization has been determined by Church and others. Therapeutically, the Röntgen rays have not been productive. Yet Hahn claims successful results in inveterate eczemas and Zarabin adds acne, favus, psoriasis and elephantiasis to the list. As to the mode of action on the skin, there is yet much dispute, some

claiming that it alters nutrition, others that the changes are chemical in their nature. Unna has demonstrated that the skin is colored brown, and this is due to increase of pigment in the upper layers of the deeper structures of the skin. Improper use of these rays may cause inflammation of the skin, death of the same, and even abscess formation.

Of considerable interest is the work of Bie upon the phototherapy of Finsen. Three facts are regarded as proven: (1) The bactericidal property of the chemical rays of light; (2) The power of these rays to produce an inflammation of the skin; (3) The power of the chemical rays to penetrate the skin. The method consists in treating local superficial skin-disease of bacterial origin by the concentrated chemical rays; the ultra-violet being the most valuable. It is only when the light is so concentrated that it has as much as is possible of the blue, violet and ultra-violet rays that the action is speedy; experiment has demonstrated that bacteria in a stratum of agar are destroyed in a few seconds. The anæmic skin allows penetration to a greater degree, and this is brought about by the lens being placed against the skin to be treated. Inasmuch as these rays, unless cooled, will produce an erythema, the lens is composed of a plain and a curved glass, giving the effect of a convex lens, set in a brass ring and between them is placed a bright blue, weak, ammoniacal solution of copper sulphate. The solution absorbs the ultra-red rays, and the color excludes a large amount of the red and yellow rays. Further, the skin is artificially cooled. The treatment is for an hour daily, and although the skin will redden and swell, no destruction of it has been observed; it is said to be painless. In ordinary lupus and lupus erythematosus (the butterfly disease of the face, so-called from its resemblance to the form of that insect) a sufficient number of patients have been observed to make the results conclusive. Since both of these diseases are very intractable to ordinary methods, it would seem that a real advance has been made.

The bubonic plague has attracted much attention, and its mode of propagation has been carefully studied by Simonde. He shows that the disease spreads from an infected human being only under favorable circumstances; the infection of rats and their migrations chiefly determine the distribution of the disease. To the known endemic foci in Asia,—Mesopotamia, Thibet and Assir,—Koch has added a fourth in East Africa, the English territory of Uganda. The mortality from the disease still remains high,—about eighty per cent,—and the disease spreads in spite of Haffkine's prophylactic inoculations. Clemow reports that Yersin's serum cannot be depended upon to yield good results and the effects from Lustig's were not encouraging. Evidently the destruction of rats and vermin capable of bearing the infection, with isolation of patients, will accomplish more than curative measures undertaken after the attack.

Many years ago in his photographic studies, Lea pointed out the fact that silver could be added to the elements existing in allotropic form of which carbon and phosphorous are well known examples. In medicine the observation has been repeatedly made, that in the presence of metallic silver, suppuration is inhibited. It is only in recent years that the true significance of these observations and their bearing upon the treatment of infectious diseases has been developed. Through Crede's efforts a soluble metallic silver has been produced, and the past year has witnessed a remarkable confirmation of the claims made for this allotropic form of silver. Obviously, metallic silver could not be introduced into the blood, and so its use was limited to local applications. Soluble silver, in all probability, can be carried along in the blood current when applied by inunction or taken by the mouth with subsequent absorption from the alimentary tract. For inunction fifteen per cent of soluble silver is incorporated in lard, and to obtain the requisite consistency ten per cent of wax is added to the product, and it is flavored with benzoinated ether. When used for inunction twenty to thirty minutes rubbing is

required. In acute suppurative processes, as lymphatic inflammation, furunculosis (boils), erysipelas, puerperal fever, septicæmia, rheumatism, in some of its forms (acute articular rheumatism being undoubtedly of an infectious nature), brilliant results have been obtained. Perhaps among the most striking have been those secured in the phlebitis (milk-leg) which occurs after childbirth, and which is an extremely unfortunate complication of typhoid fever, dysentery, and various other local septic conditions, occurring in the pelvic and abdominal cavities. Or, the starting point may be found in the opposite direction, as, for example, in an ulcer of the leg. In general sepsis, when inunction is not practicable, soluble silver, in doses of one-third of a grain, may be given twice or thrice daily, followed by a cup of boiled water or tea. If irrigation is desired it may be employed in from one part to five or ten thousand of water. Among others Welter has claimed to have secured remarkable results in a series of instances of general infection. Schirmer, in epidemic cerebro-spinal fever, Jones in puerperal sepsis, and Park for erysipelas. Inasmuch as this non-poisonous allotropic silver is permanently soluble in water and albuminous fluids and is a most effective general antiseptic, which can be introduced into the system without causing either local reaction or general poisonous effects, it may be used by injection into the subcutaneous tissues. For this purpose one-half of a one per cent. solution in distilled water is employed. It remains metallic silver in sterile blood and lymph; but in the presence of pathogenic bacteria, or their toxins, it enters into combination with them, and acts as a vigorous germicide and antitoxin. It is said that argyria, or staining of the skin and mucous membranes, which occurs after prolonged administration of ordinary silver salts, especially the nitrate, does not occur with this preparation. This method of treatment has markedly enlarged the field of the physician in treating internal diseases of bacterial origin.

Nearly three years ago the writer presented a paper at the

Montreal meeting of the British Medical Association, upon the *Treatment of Insomnia*. At that time the fact was insisted upon that sleeplessness was a symptom not a disease, and that the cause should, if possible, be removed. If we fail to remove the cause,—such as gout, bad habits, abuse of various stimulants or tobacco,—then drugs, under the guidance of a physician, may be resorted to. To find a valid explanation of drug action, recent advances in brain anatomy and physiology were studied, and the chemical composition of well proven hypnotics analyzed. Noting that it has been clinically shown that the ethyl—and methyl—alcohol radicles depress the functions of the higher cerebral centres, and the chlorine more than the alcohol radicles is depressant to the lower centres, the composition of the theoretical hypnotic was suggested. That is, to reach both the higher and the lower centres it must associate with one of those alcohol radicles a sufficiency of chlorine. Recently Houghton has found in chlore-tone, which is chemically trichlor-tertiary-butyl-alcohol, a hypnotic which promises much in respect to safety, reliability, ease of administration and general freedom from disagreeable after-effects. Incidentally, and yet perhaps of more importance, the presentation of the dangers of the indiscriminate use of such hypnotics as chloral, sulphonal and trional, has been more than confirmed. The mental and moral degradation of chloral *habitués* and the ready acquisition of the habit, the instances of acute and chronic poisoning from the use of the other drugs, have received much attention of late. In support of this, may be cited Bampton, Vogel, Pettit, Friedlaender, and others. Opium or morphine are narcotics, not hypnotics; they club the patient into insensibility, and narcotism is not sleep. They should never be employed to produce sleep.

In pure therapeutics much work of lasting value has been done during the year. The antitoxin treatment of diseases has made steady progress although diphtheria-antitoxin is well in the lead in reaching an established position. The serum treatment of

other diseases, as tuberculosis, pneumonia, leprosy and typhoid fever, is still in the experimental stage. The exploitation of a yellow fever serum by certain scientifically irresponsible persons, has done much to discredit the really good work done by Sanarelli and others. An extract of the supra-renal gland has been shown to be of remarkable power in contracting blood vessels, and its field of usefulness is well defined. Bates has shown its value in various local inflammatory conditions, and as an aid in operative work, Abel has recently isolated a substance which he has named, *epinephrin*, and which, apparently, is the active principle of the gland. Various organic salts of morphine have been introduced, but while they are useful, the evidence that they are incapable of forming a drug-habit has not been forthcoming.

New coal-tar products are diminishing in number; a cause for sincere congratulation. At present the physician does not regard fever with as much apprehension as formerly; he looks upon it merely as a symptom. These products have their proper scope in the relief of pain, and longer observation is required before the most efficient, and, at the same time, the least harmful to the heart and general nutrition shall be selected. The past year has witnessed the decline of many fads and fancies. The physicians who would cure all diseases by cold water, rigid diet, electricity, or some unusual drug, are fast becoming extinct. Those who possess wide information, good judgment, and abundant therapeutic resources, and who treat the patient as well as some phase of the disease, are shaping medical thought. The broad, well-equipped, careful and judicious physician, is the man of the hour. In the education of the people regarding what they have a right to demand of their medical advisers at the present stage of medical knowledge, lies the greatest safeguard for progress which shall be both substantial and permanent. The reduction of mortality, the shortening of the duration of illness, the prolongation of a comfortable life by medical experts, is

beyond credence save by those familiar with the best and latest. The term "expert" is chosen advisedly, for the number of experts in a given field is very limited as compared with specialists. To educate the public in medical progress is not easy, for the daily press is used by physicians of meagre attainments for mercenary ends, and nothing educational can come from it. The traditions of the past and the inertia of the dead level of professional mediocrity, prevent the leaders of medical practice from directing current literature to an extent sufficient to make their influence marked. Teach the people what is best and their demands will make that more widely known and practiced.

In this brief review, only salient points of general interest have been mentioned; those purely technical have been passed by. Sufficient has been advanced,—so it is believed,—to make apparent that the earnest workers in medicine are making substantial additions to that knowledge which aims to increase happiness, health and duration of life.



THE NATURE OF THE CREATIVE IMAGINATION

TH. RIBOT, *Paris.*



CONTEMPORARY psychologists have studied with much enthusiasm and success the imagination as the strictly representative function of mind. The many works that treat of the various groups of images (visual, auditory, tactile, motor) are generally known, and form an aggregation of research of the most substantial kind; research solidly grounded on observation, both objective and subjective, on the data of pathology, and on the experiments of the laboratory. The study of the creative or constructive imagination, on the contrary, has been almost wholly neglected. It would not be difficult to show that the most complete, the most excellent, the most recent treatises on psychology devote to this subject at best one or two pages; sometimes these treatises do not even mention the subject at all. A few articles only, a few rare and brief monographs, represent the work of the last quarter of the century on a question that surely does not deserve this attitude of indifference or disdain. Its importance cannot be disputed; for even though the creative imagination has remained until now almost inaccessible to experimental research, properly so called,¹ there are other

(1) See, however, an article by Professor Royce in the *Psychological Review* for March, 1898.

objective procedures which enable us to approach it with some chance of success, of continuing, indeed, the work of the old psychologists, though with methods that are more in conformity with the requirements of contemporary thought.

Naturally, my purpose in the pages that follow is not to attempt a complete monograph, as this would require a book, but only to search into the essential and fundamental conditions of the creative imagination; to show that this has its origin and its principal source in the natural tendency of images to transform themselves into acts,—more simply expressed, in the motor elements that inhere in the image.

I.

It has been often repeated that one of the principal achievements of modern psychology is to have so solidly established the rôle and the importance of movements, especially, to have demonstrated by observation and experiment that the representation of a movement is an incipient movement, a movement in the nascent stage. Nevertheless, those psychologists who have insisted the most strenuously on this proposition have ventured in their researches little beyond the domain of the passive imagination; they have generally confined themselves to the facts of pure reproduction. My aim is to extend their formula, to show that this formula explains, at least in great part, the genesis of the creative imagination as well.

Let us endeavor, then, to follow step by step that transition which leads from representation, pure and simple, to creation, by showing the persistence and the preponderance of the motor element in the degree that we rise from repetition to invention.

The preliminary question arises: Do all representations include motor elements? Yes, as it seems to me, because every perception presupposes movements in some measure, and because representations are the residue of anterior perceptions. We may be sure, without entering in detail upon the question, that this

claim is a valid one in so far as the vast majority of the cases are concerned.

In the matter of visual and tactile images there can be no doubt possible as to the importance of the motor elements that enter into their composition. Hearing, it is true, is for a superior sense rather poorly endowed with movements; but, if we take into account its intimate association with the vocal organs, which are so rich in motor combinations, we shall find that a sort of compensation has taken place. Smell and taste, though of secondary rank in human psychology, are very highly developed in certain animals, in which the olfactory apparatus acquires a complexity of movements in proportion to its importance, and which occasionally causes it to approximate vision. There is also the group of internal sensations which might provoke discussion. Passing over those obscure impressions which scarcely admit of representation, we can prove that the sensations arising from the changes of respiration, circulation, digestion, are not wanting in motor elements. The fact alone that in some persons vomiting, hiccoughing, micturition, etc., may be produced by the perceptions of sight and hearing, prove that representations of this kind have a tendency to transform themselves into acts.

Without insisting on this point, we can affirm, therefore, that this position rests on an imposing mass of facts, that the motor element of the image tends to make this lose its purely interior character, tends to objectify, to externalize it, to project the image out of us.

In the meanwhile, we ought to observe that all of this does not take us out of the domain of the passive imagination, of memory. All of these revivals are *repetitions*, while the creative imagination demands something *new*: this is its peculiar and essential sign. In order to rightly comprehend the passage from reproduction to production, from repetition to creation, we must consider other rarer and more extraordinary facts, which are to be met with in only a few privileged individuals. These facts, which have been

known for a long time, which have been surrounded with a certain air of mystery and attributed in a vague way to the "power of the imagination," have been studied in our time in a much more rigorous and methodical manner. It will suffice for our purpose to recall only a limited number of them. Many instances are on record of creeping sensations (formications), or of pains that appear in certain regions of the body solely as the effect of the imagination. Certain individuals can quicken or diminish the beating of the heart at will, that is to say, as the result of an intense and persistent representation. The celebrated physiologist E. F. Weber possessed this singular ability, and has described for us the mechanism of the phenomenon. More wonderful still are the instances of blisters produced by suggestion on hypnotic subjects. Finally, let us remind the reader of the remarkable history of the stigmatists, who from the thirteenth century to our own time have been quite numerous, and who offer interesting diversities in their affection; some having only the marks of the crucifixion, others of the flagellation, others of the crown of thorns. And let us add to these facts those profound modifications of the organism which are produced by suggestive therapeutics; the marvelous effects of the faith that heals, that is to say, the miracles of all religions, in all ages and in all places; and this brief enumeration will be sufficient to recall certain *creations* of the human imagination which psychologists are so strongly inclined to neglect.

We should add that the image does not act merely under a positive form, as in the cases just mentioned; it has occasionally an inhibitory power; it restrains the function of the organ. The lively representation of a movement as arrested is the beginning of the actual arrest of the movement; it can end even in total arrest. Such are the cases of "paralyses by ideas," which were first described by Reynolds, and later by Charcot and his school, under the name of psychic paralyses; the obstinate conviction of the patient that he cannot move a limb renders this member

incapable of any movement whatever, and he recovers his power of movement only when the morbid representation has disappeared.

These and kindred facts suggest several observations.

First, that we have here *creation* in the strict sense of the term, although this creation is still enclosed within the limits of the organism. That which appears is *new*. However truly one might be able to maintain that we are acquainted in our own experience with these formications, and with accelerations and abatements of the heart's action, though we are generally not able to produce them at will, this position becomes absolutely untenable when the question is one of blisters, of stigmas, and of other phenomena commonly reputed miraculous. These are without precedent in the life of the individual.

We observe, in the second place, that in order to produce these isolated conditions, certain additional elements must of necessity enter into the mechanism that puts them forth. This mechanism is, at bottom, very obscure. To fall back on the power of the imagination is simply to put a word in the place of an explanation. But happily for us, we are not called on here to sound the depths of the mystery. It is enough for us to prove the existence of these facts; to prove also that they have a representation as their point of departure; to prove, finally, that mere representation is not sufficient. What more, then, is necessary? Let us note, in the first place, that these events are rare. It is not within the reach of every one to eradicate stigmas, or to be healed of a paralysis that has been declared incurable. This happens only in the case of those who are actuated by an impassioned desire, who have an ardent faith that it will be thus, since this is the indispensable psychic condition of recovery. What acts in cases of this kind is a state that is not simple, but double; an image, and along with the image, some peculiar affective state (some desire, aversion, emotion, or passion). In other words, there are two cases.

In the first case, the motor elements are the agents,—the motor elements which are included in the image, which remain over from anterior perceptions.

In the second case, the motor elements act, plus affective states, tendencies which sum up the energy of the individual, and explain the power of the motor elements. To conclude, this group of facts reveals to us the existence beyond the images of another factor, which is instinctive or affective in its nature, which we shall have to study later, and which will bring us to the ultimate ground of the creative imagination.

I fear least the distance between the facts we have enumerated above and the creative imagination, properly so called, may seem enormous to the reader. And why so? First of all, because in the peculiar cases cited the sole material of creation is the organism, and because this creation is not separated from the creator. Also, because these facts are of an extreme simplicity, while the creative imagination, as usually defined, is of an extreme complexity. In the cases mentioned, a single cause operates, a more or less complex representation; but in the creative imagination, we have several images coöperating with combinations, coördination, arrangement, grouping. But we must not forget that our present aim is simply to discover a "form of a passage" ¹ between reproduction and production; to show the community of origin of the two forms of the imagination,—the purely representative faculty and the faculty of creating by means of images;—to show, at the same time, the work of separation and disjunction that goes on between the two forms.

Since the main object of this study is to prove that the ultimate ground of invention is to be sought in motor manifestations, I shall resume my thesis under another, clearer, more concise, more psychological form, by asking this question: Of the various modes of the mind's activity, which is the mode that offers the

(1) There are others, as we shall see further on.

most complete analogy with the creative imagination? I answer without hesitation: volitional activity. *The imagination is in the intellectual order the equivalent of the will in the order of movement.* Let us prove this analogy.

1. The identity of development in the two cases. The establishment of the volitional faculty is slow and progressive, is impeded by checks. The individual must first become master over his muscles, and then by the aid of these muscles extend his control over other things. Reflexes, instinctive and expressive movements of the emotions, are the primary cause of movements that are willed. The will has inherited no movements of its own; it must coördinate and associate, since it dissociates in order to form new associations. The will reigns by right of conquest, not by right of birth. Likewise, the creative imagination does not emerge in full panoply.

Its materials are images, which are here the equivalents of movement; it passes through a period of endeavor; it is always at the outset (for reasons that we shall indicate later) an imitation; it reaches only progressively its complex forms.

2. But this first assimilation does not go to the bottom of the matter; there are other still profounder analogies. First, there is the fundamentally subjective character of the two cases. The imagination is subjective, personal, anthropocentric; its movement passes from the interior to the exterior; it has the converting into an object as its goal. Knowledge (that is to say, intelligence in the restricted sense) is exactly the reverse in its characteristics; it is objective, impersonal, receives from the exterior. For the creative imagination, the inner world is the regulator; there is a preponderance of the within over the without. For knowledge, the outer world is the regulator; there is a preponderance of the without over the within. The world of the imagination is *my* world as opposed to the world of knowledge, which is that of all my fellows. But precisely the contrary is true as regards the will. Here, we could repeat word for word

what we have just asserted of the imagination. The repetition, however, would be useless. The ultimate source of both is the individual causality,—whatever opinion, for the rest, may be held as to the final nature of causality and will.

3. Both are teleological in their character, both act only with reference to an end; just the reverse of knowledge which confines itself wholly to ascertaining. Every exercise of the will is with respect to a special object, be this object trifling or of supreme importance. We always invent for an end, whether it be a Napoleon who is imagining the plan of a campaign, or a *chef* who is concocting a new dish.

In both the will and the creative imagination, there is always an end in view, now simple in its nature and attained by direct means, and now complex and remote,—an end that presupposes a series of subordinate ends, which become in their turn means by reason of their relation to the ulterior motive. In both cases, there is a *vis a tergo* which we designate under the vague name of spontaneity, and which we shall endeavor to explain later on, and there is a *vis a fronte*, a movement due to attraction.

4. To these natural correspondences of function must be added other, secondary, subsidiary analogies which exist between forms of the creative imagination that miscarry, and impotencies of the will. In its normal, complete state the will ends in an act; but in those who are afflicted with indecision, who are infirm of purpose, either deliberation never ends, or the resolution, if formed, remains inert, incapable of being realized, of asserting itself in a practical way. And just so, the creative imagination in its complete state tends to externalize, to affirm itself in some work which shall exist not only for the creator, but for all others. With mere dreamers, on the contrary, the imagination remains in the shape of a vague sketch, shut up within the personality; it is never invested with a body, never takes form in some æsthetic or practical invention. Revery is

the equivalent of incomplete volitions ; it is the aboulia of the creative imagination.

It is unnecessary to add that this analogy which we have pointed out between the will and the creative imagination is but a partial analogy, and that it was intended only to place in clearer light the rôle of motor elements. No one will confound two manifestations of our psychic life that are so evidently distinct, and it would be absurd to waste time in enumerating the differences between them. It is sufficient to mention the single characteristic of newness, since this is the peculiar and indispensable sign of invention, while for volition it is only an accessory. The extraction of a tooth, for example, requires as much effort on the part of the patient the tenth as on the first time, though the operation is no longer a novelty.

After these preliminary observations, we must proceed to our examination of the creative imagination, with the hope of discovering its real nature, in so far as this nature is accessible through our present means of investigation. The imagination is, indeed, for our mental life a tertiary formation ; it presupposes a primary layer (that of sensations and simple emotions), and a secondary layer (images and their associations, certain elementary logical operations, etc). Since the imagination is composite in its character, it can be resolved into its original elements, which we shall study under these three heads : *intellectual factor*, *emotional factor*, *unconscious factor*. But this of itself is not sufficient ; we must complete the analysis. Every creation of the imagination, whether great or small, is organic, and demands a principle of unity. There is, therefore, a synthetic factor also which it devolves upon us to determine.

II. THE INTELLECTUAL FACTOR.

Considered under its intellectual aspect, that is to say, in so far as it borrows its elements from knowledge, the imagination presupposes two fundamental processes : the one, negative and

preparatory, namely, dissociation, the other, positive and constructive, namely, association.

1. Dissociation is the abstraction of the old psychologists, who well understood its importance for the subject on which we are now engaged. The term "dissociation" seems to me the better one, because it is the more comprehensive; it denotes a genus of which abstraction is a species. Dissociation is a spontaneous process, and of a much more radical nature, while abstraction, properly so called, acts only on isolated states of consciousness. Dissociation acts, moreover, on series of states of consciousness, which it subdivides, breaks up, dissolves, and so prepares the series by means of this preliminary work to enter into new combinations.

The perceptive act is a synthetic process, and, in the meanwhile, dissociation (or abstraction) exists already in perception in embryonic form, for the very reason that it is a complex state. Each individual perceives in his own special fashion, according to his temperament, and as he is impressed at the moment. A painter, a sportsman, an indifferent observer, do not see the same horse in the same way: the features that interest one will escape the notice of the others.

Since the image is a simplification of the sensorial data, and its nature determined by the data of anterior perceptions, the work of dissociation must inevitably survive in the image. It is not sufficient merely to affirm that this work, as is shown by observation and experience, singularly increases in the majority of instances. In order to follow this process of dissolution in its progressive development, we may divide images into three rather broad categories: complete, incomplete, schematic; and thus study them by turns.

The group of images that we term complete includes, first of all, those objects that incessantly recur in the experience of everyday: my inkstand, the form of my wife, the sound of a bell or of a neighboring town clock, etc. To this category belong

also the images of objects which we have perceived only a limited number of times, but which have remained for various subsidiary reasons clearly outlined in the memory. But are these images complete in the rigorous sense of the word? They cannot possibly be so; this is an illusion of the consciousness which is immediately corrected when it is confronted with the reality. Representation is even less able than perception to include all the qualities of an object, since representation is a variable selection that is determined by the circumstances under which it is made. The painter Fromentin, who used to boast that he retained after two or three years had passed "a rigorously exact recollection of things which he had barely caught a glimpse of while on his travels," makes, however, in another connection, the following admission: "My recollection of things, though unusually faithful, never has that documentary certainty that would be admitted by all. But the more it weakens and is transformed in becoming the property of my memory, the greater is its value for the artistic uses to which I put it. According as the precise form changes, another appears in its place, half real and half imaginary, but which I deem for my purpose the better of the two." Let us bear in mind that he who speaks thus is a painter, who is endowed with a rare visual memory; but later research has shown that in the majority of men, these images that are thought to be complete and exact undergo the same process of transformation and deformation. This is demonstrated when we come face to face with the original object after a considerable lapse of time, and so are able to compare the real thing with the representation of it.¹ /

(1) Compare especially J. Philippe, *La déformation et la transformation des images* in the *Revue philosophique* for May and November, 1897. Although these researches were intended only for the representations of sight, there is no doubt that the same law holds good as regards the others also, especially auditory representations (voice, song, harmonies).

Let us add that in this group the image always corresponds with *special, individual* objects. This, however, does not apply to the two remaining groups.

The group of incomplete images, according to the testimony of consciousness itself, proceeds from two distinct sources: first, from insufficient or blurred perceptions; secondly, from impressions of similar objects which from being too frequently repeated finally lose all of their individual signs, and cannot be distinguished from each other. This latter case has been well described by Taine. "A man," he says, "who after having strolled through an alley of poplars, wishes to picture to himself a poplar, or who after looking into a poultry yard tries to picture to himself a hen, immediately experiences an embarrassment. He is unable to hold his separate recollections apart; they all run into one another. Experience becomes a source of effacement; image cancels image, reducing the whole group to a state of dull tendencies, which their contrariety and equality prevent from assuming the ascendancy. Images are blunted by these mutual encounters, just as bodies suffer abrasion by friction."¹

From incomplete images we pass to the next and last group, that of schematic images, that is to say, images that are totally wanting in individual signs; the vague representation, for example, of a rose-bush, a pin, a cigarette, etc. This is the extreme degree of impoverishment. The image, gradually divested of all individual signs, is no longer more than a shadow. It has now become that form of passage between representation and the pure concept which is at present termed the generic image.

The image, therefore, must undergo an unceasing process of metamorphosis, of omissions and additions, of dissociation and corrosion. Not that the image is a dead thing; it may in nowise be compared to some photographic stereotype from which copies are reproduced indefinitely. But depending as it does on the state

(1) *De l'intelligence*, vol. i. bk. ii. chap. ii.

of the brain, the image changes as all that is living changes, it is subject to gains and losses,—especially to losses. But each of the three classes we have mentioned above offers its special utility to the inventor; all serve as materials for the divers kinds of imagination: under their concrete form, for the mechanician, for the artist; under their schematic form, for scholars and others.

So far in our investigation, we have seen only a part of this process of dissociation, and, all things considered, but the smaller part of it. Until now, we have appeared to treat images as if they were isolated facts, psychic atoms; and this, though the position is one that belongs purely to theory. Representations are never isolated; they are in reality the links of a chain, or rather the meshes of a web, of a net-work, radiating in all directions by means of their manifold relations. Dissociation, moreover operates on *series* also, truncates, mutilates, demolishes, reduces them to ruins.

The ideal law of the revival of images is what has been known since Hamilton as the “law of redintegration,”¹ which consists in the passage from the part to the whole; each element tending to reproduce the complete state; each member of a series, the whole of the series. And were this law of redintegration the only one, invention, as will readily appear, would be forever impossible; we should not be able to go beyond mere repetition; we should perpetually remain the prisoners of routine.

But there is an antagonistic force that delivers us from the tyranny of absolute revival. This force is dissociation.

It is passing strange that none of the psychologists who have been for so long studying the laws of association, has ever thought

(1) In his recent history of theories of the imagination (*La psicologia dell'immaginazione nella storia della filosofia*, Rome, 1898) Ambrosi shows that this law is to be found already formulated in the *Psychologia empirica* of Ch. Wolff.

to inquire whether the inverse operation, whether dissociation does not have its laws too. But we cannot attempt such an inquiry here, as it is not within the limits of our study. It will be sufficient to point out two general conditions which determine the dissociation of series.

1. There are the internal or subjective causes. The revival of a figure, of a monument, of a landscape, of an event, is most frequently only a partial revival, depending on various conditions which revive the essential and discard secondary details; and this essential detail which chances to survive the process of dissociation is determined by subjective causes, the principal of which are, first of all, practical, utilitarian reasons for the survival. This is the tendency, which we have already mentioned, to neglect whatever is no longer of practical utility, to shut it out from the consciousness. Helmholtz has shown that in the act of vision various details escape the eye, for the reason that they have no bearing on the actual needs of existence; and there are many other examples of this sort.

There are also the causes of an affective sort, which dominate the power of attention, and set it in an exclusive direction,—causes which we shall study more closely in the course of this article. Finally, there are the logical or intellectual causes; and we designate under this name that law of mental inertia, or law of least resistance, under which the mind tends towards the simplification, the lightening of its labors.

2. We come, next, to the external or objective causes, which are the variations in experience. When two or more qualities or events have never appeared in our experience as other than associated, we naturally do not dissociate them. Thus, the uniformity of natural laws is the great adversary of dissociation. Many truths (the spherical form of the earth, for example,) obtain credence with great difficulty, because it is first necessary to rupture associations that have hitherto been indissolubly bound together. The oriental king of whom J. Sully speaks, who had never seen any ice,

refused to admit the possibility of a frozen water.¹ A complete impression whose constitutive elements had never been given in our experience as separated would assuredly prove refractory under analysis. "If all cold things were wet," says William James, "and all wet things cold * * * ; if all liquids were transparent and no non-liquid were transparent, it would be long before we had separate names for liquidity and transparency." On the contrary, he adds: "What is associated now with one thing and now with another tends to become dissociated from either. * * * One might call this the law of dissociation by varying concomitants."²

Let us observe, in order to make clear the absolute necessity that exists for dissociation, that total redintegration is by its very nature an obstacle in the way of creation. We hear of persons who can memorize with ease twenty or thirty pages of a book; but if they happen to need some particular passage in the piece, they cannot take it out of the whole, but must begin at the beginning, and recite up to the required place; with the result that this extreme facility of memory becomes a serious inconvenience. Not to dwell on these rare cases, we know that persons of an ignorant and narrow turn of mind, have the same invariable method of telling a story; all is on the same plane, the important and the unimportant, the useful and the useless; they do not spare us a single detail. In other words, they are incapable of selection. Minds of this type are little fitted for invention. But to state the matter more briefly: there are two sorts of memory. The first sort, all systematized (habit, routine, poetry or prose learned by heart, impeccable musical execution, etc.) is a single lump, and ill-adapted for entering into new combinations. The second sort, not systematized, that is, made up of little,

(1) Sully, *The Human Mind*, vol. i. p. 365.

(2) William James, *Psychology*, vol. i. p. 502.

more or less coherent groups is in consequence supple and plastic, and especially adapted for entering into new combinations.

We have mentioned only the spontaneous, natural causes of dissociation, and have omitted the voluntary and artificial ones, as these are only the imitation of the first. Through the workings of these various causes, images and series of images are mutilated, reduced to fragments, sometimes to ruins,—just that condition, however, in which they are the best fitted to serve as material for the inventor. This process is after the analogy of that which goes on in the formation of the earth's surface: a new soil is produced by the wearing away of the old rocks.

II. Association is one of the great questions of psychology; but as it does not properly belong to our subject, we shall discuss it only in the strict measure of its utility. Nothing is easier than to keep within due limits. Our task may be stated in a single, very clear and very succinct question. What are those forms of association that give rise to *new combinations*, and under what influences are they formed? All the other modes of association, namely, those that are only repetition, must be eliminated. Necessarily, then, this subject cannot be treated in a single moment; we must study it by turns in its relations to our three factors: intellectual, emotional, unconscious.

It is generally admitted that the term "association of ideas" is a faulty one. The term is not sufficiently comprehensive, since association dominates psychic states other than ideas.

The term seems to indicate pure juxtaposition, whereas associated states are modified by the very fact of their connection. But as the term is one consecrated by long usage, it would not, perhaps, be possible to banish it.¹

Moreover, psychologists are not in accord in their definition of the laws or principal modes of association. Without taking sides

(1) For a good criticism of this term, see Professor Titchener, *Outlines of Psychology*, p. 190: New York, 1896.

in this discussion, I shall accept the most generally received classification, the one that fits the best into our subject; the classification that reduces the whole to the two fundamental laws of contiguity and resemblance. Various efforts have been made in recent years to reduce these to a single law, in that some have reduced resemblance to contiguity, and others contiguity to resemblance. The question aside concerning the ground of this discussion, which seems to me rather a waste of time, and to be ascribed, perhaps, to what has now become an excessive thirst for unification, I must admit, nevertheless, that the debate is not without its interest for a study of the creative imagination, since it has clearly demonstrated that the two fundamental laws of association have each a mechanism that is peculiar to itself.

Association by contiguity (or continuity), which Wundt calls external, is simple and homogeneous; it reproduces the order and connection of objects; and is reducible to habits contracted by our nervous system.

But is association by resemblance, which Wundt calls internal, in the strict sense of the term an elementary law? Many doubt this. Without entering upon the long and often confused controversies which the question has called forth, we can sum up the results as follows. In what is termed association by resemblance, three moments are to be distinguished: (1.) That of presentation; a state *A* is given by perception or association by contiguity. This is the point of departure. (2.) That of the process of assimilation. *A* is recognized as being more or less similar to a state *a* previously experienced. (3.) By reason of the co-existence of *A* and of *a* in consciousness they can later on reciprocally call up one another, although, in fact, the two primary events *A* and *a* have never coexisted previously, and sometimes even could not possibly have thus coexisted. It is evident that the second is the principal moment in this mental operation; but this moment consists in an act of active assimilation, not one of association. Thus William James maintains, that resemblance

is not an elementary law: "It is a relation which the mind perceives after the fact, just as it may perceive the relations of superiority, of distance, of causality, etc. * * * between an object and some second object which the associative machinery calls up."¹ Association by resemblance presupposes a mixed process made up of association and dissociation. It is an active form, and hence becomes the principal source from which the materials of the creative imagination proceed, as will be shown more than once in the course of this study.

After this somewhat protracted, it is true, but nevertheless indispensable preamble, let us come at once to the intellectual factor, properly so called, the objective of our gradual approach. The essential, fundamental element of the creative imagination in the intellectual order is the faculty of *thinking by analogy*, that is to say, by partial and often accidental resemblances. We mean by analogy an imperfect form of resemblance: the similar is a genus of which analogy is a species. Let us examine somewhat in detail the mechanism of this mode of thought, in order that we may perceive how analogy becomes from its very nature an almost inexhaustible instrument in the hands of creation.

Analogy can rest wholly on the quantity of the attributes that are compared. Let *a b c d e f* and *r s t u d v* stand for two beings or objects whose constitutive attributes are represented symbolically by each letter. Evidently, the analogy between the two is very faint, since both have only a single element in common, namely, *d*. Increase the number of elements common to both and the analogy will increase in the same proportion. But the assimilation that we have indicated above in symbolical form is by no means an uncommon one in minds that are

(1) The bibliography in detail of these discussions as to the reduction to unity may be found in Todt: *Lehrbuch der Psychologie*, p. 490. Stuttgart, 1896. On the comparison of the two laws, see William James, *ibid.*, vol. i. p. 590; J. Sully, *ibid.* vol. i. p. 331 ff; Höffding, *Psychology*, p. 213 ff.

strangers to a severer mental training. A child, for example, sees in the moon and stars a mother surrounded by her daughters. The aborigines of Australia called a book a mussel solely because it opened and shut like the valves of a shell-fish.

Analogy may also have as its basis the quality or value of the attributes compared. It leans for support on a variable element that oscillates between the essential and the accidental, between reality and appearance. The analogies that exist, for example, between cetacea and fish are great for the profane, though feeble for the naturalist. Here, again, numerous assimilations are possible, provided we do not inquire too closely whether they be frail or robust.

Finally, in the untrained mind a half unconscious process goes on that might be called a transfer by omission of the middle term. An analogy exists between $a b : d e$ and $g h a i f$ by reason of the common character a ; between $g h a i f$ and $x y f z q$ by the character f , and finally an analogy is established between $a b : d e$ and $x y f z q$ on no other ground than their common analogy with $g h a i f$.

In the affective order transfers of this kind are very frequent.

Analogy, unstable, wavering, multiform process that it is, calls forth the most novel and unforeseen groupings, and by reason of its practically unlimited suppleness produces with equal ease the most absurd comparisons and the most original inventions.

After these observations on the mechanism of thought by analogy, let us observe the processes which it employs in the work of creation. According to all appearance the problem is inextricable. Analogies are so numerous, so diverse, so arbitrary, that at first one is sure to despair of discovering any regularity whatever in the creative work. It would appear, however, that this creative work may be reduced to two principal types or processes: namely, personification and transformation, or metamorphosis.

Personification is the original process, in that it is radical and always one with itself, though transitory; it passes from our-

selves to objects outside of us. Personification consists in putting a soul into everything, in finding in all that shows signs of life, and even in the inanimate world, desires, passions, and will which are analogous to our own, and which act like ours with reference to definite ends. This state of mind is fairly incomprehensible to the adult, to the civilized man; but we are obliged to admit the reality of it because of the facts beyond number that bear witness to its existence. I need not enter in detail upon any of these innumerable facts. They are too generally known, teeming as they do in the volumes of the ethnologist, of the traveller among savage tribes, of the mythographer. All of us, moreover, at the beginning of our life, in our early childhood, have passed through just this stage, psychologically, of universal animism. Works on child-psychology abound in examples that leave us no possible room for doubt on this score; the child endows every object with a personal life; and so much the more when his imaginative faculty is highly developed. But this period of universal animism, which in the civilized man lasts only for a brief time, is in the savage a permanent and ever active tendency. This process of personification becomes, therefore, that never-failing source of invention, from which the great majority of myths and an enormous mass of superstitions have poured forth, along with so large a number of æsthetic creations. To sum up the whole matter in a word: all things are invented *ex analogia hominis*.

Transformation, or metamorphosis, is a process that is general and permanent, that is multiple in its forms, and that passes not from the thinking subject to exterior objects, but from one object to another object, from one thing to another thing. Transformation may be defined as a transfer by partial resemblances. The operation rests on two fundamental bases.

At one moment, on vague resemblances that are furnished by perceptions. A cloud, for example, becomes a mountain, or the mountain some animal of fantastic shape; the noise of the wind

a lament, etc. Another moment, and it is an affective resemblance that predominates. A perception awakens a certain sentiment, and becomes in consequence the mark, the sign, the plastic form, of that sentiment. The lion represents courage, the cat cunning, the cypress mourning, etc. All that is doubtless erroneous or at best arbitrary; but it is the part of the imagination to invent, not to know. No one is ignorant of the fact that metaphors, allegories, and symbols are created by this process; and we must not suppose, in the meanwhile, that the process is limited to the domain of art or to the evolution of language. We meet it at every step in practical life, and in invention of all kinds, whether industrial, commercial, or scientific.

Let us observe, indeed, that analogy, which, as we have remarked above, is an imperfect form of resemblance,—presupposing, as it does, between the objects compared a sum of resemblances and differences of ever varying proportions,—admits necessarily of all the degrees of approximation. At one extreme, the fancied resemblances are wholly vain and extravagant; at the other extreme, the analogy is confined to exact resemblances; it is brought near to knowledge, properly so called, as, for example, in mechanical and scientific invention. Hence we need not wonder that the imagination often becomes a substitute for the reason, and as Goethe said, its “prophetic forerunner.” There is a community of nature between the creative imagination and rational research; both presuppose the faculty of seizing upon resemblances. On the other hand, the preponderance of the exact mode of procedure, or of the approximative, has from the earliest times constituted the difference between the thinker and the man of the imagination.

III. THE EMOTIONAL FACTOR.

The influence of the affective states on the work of the imagination is a matter of common knowledge; but this influence has come in for a larger share of study on the part of the moralist, who has, most frequently, condemned or criticized it as the

source of endless delusion and error. The point of view of the psychologist is an entirely different one. It is not his business to ask whether emotions and passions give birth to chimeras, but why and how they act. He is none the less assured, however, that the affective factor yields to no other in importance; that it is the leaven without which no creation is possible. Let us, then, study this factor under its principal aspects, though we shall not be able in this connection to discuss the question in its entirety.

I. We must show, first of all, that the influence of the affective life is fairly limitless; that it pervades the whole field of invention without any exception; that this is not a gratuitous assertion, that it is, on the contrary, borne out to the letter by the facts; and that we are justified in maintaining the two following propositions:—

(1) *All* forms of the creative imagination involve affective elements. This assertion has been called in question by psychologists of authority, who hold that “emotion is added to the imagination under its æsthetic, not under its mechanical and intellectual form.” This is indeed an error, which arises from the confusion, or from the faulty analysis, of two distinct cases; namely, non-æsthetic and æsthetic creation. In the first, the part of the affective life is simple, while in the second, the part of the emotional element is twofold.

Let us consider invention, first under its most universal form. The affective element is primary, original; for every invention presupposes a need, a desire, some tendency, some propulsive force that is not satisfied; it is often, indeed, a sort of travail that is full of distress. The affective state, moreover, is essentially concomitant, that is to say, it accompanies in the guise of pleasure, pain, hope, spite, anger, etc., all the phases or wanderings of the creation. The creator can, at the mercy of chance, pass through the most diverse forms of exaltation and depression; he can experience, in turn, the dejection of defeat and the joy of victory; he can experience, finally, the satisfaction

of being liberated from the birth-throes of the creation itself. I defy one to bring forward a single example of invention produced *in abstracto* and absolutely unmixed with any affective element; the constitution of human nature is not compatible with such a miracle.

But let us turn, next, to the special case of æsthetic creation, and to the forms which are allied with this. Here, again, we find the emotional factor, from the beginning, the prime motor, and then attached as concomitant to the various phases of the creation. But in addition to this, its very affective states become the source of the creation. It is a well known fact, almost the rule, that the poet, the novelist, the dramatic author, the musician, often even sculptor and painter, lose their identity in that of their characters, enter into their sentiments and passions. We have, therefore, in the case of æsthetic creation two affective currents; the first consists in the emotion, the source of the art; the second evokes the creation and develops with it.

The difference between the two cases which we have thus separated, consists in that, and in nothing more. The existence of an emotion,—the fundamental condition of æsthetic creation,—does not alter in the slightest degree the psychological mechanism of invention in general. Its absence in the other forms of the imagination does not do away with the necessity of affective elements everywhere and always.

(2) All the affective frames of mind, whatever their character, can exert an influence on the creative imagination. Here again, my position is controverted, notably by Alzelt-Nervin in his brief and substantial monograph on the imagination.¹ The author, who adopts the division of the emotions into two classes, sthenic or excitant, asthenic or depressive, assigns to the first class the exclusive prerogative of exerting an influence upon creation. He limits his study wholly to the æsthetic imagination, it is

(1) Weber, *Die Phantasie-Vorstellungen*. 1889 Graz. p. 4 (11) P.

true; but, even as thus restricted, his thesis cannot be established. The facts completely contradict him, since we can demonstrate with ease that all forms of the emotion, without a single exception, act as the leaven of invention.

None will deny that fear is the type of asthenic manifestations. But is not fear the parent of innumerable phantoms and superstitions, and of religious rites that are wholly unreasonable and chimerical?

Anger, in its exalted and violent form, is rather an agent of destruction, a fact which seems to make against my thesis; but let the storm pass,—it is always short in its duration,—and we find in its place mitigated, intellectualized forms, which are the several modifications of the primary rage as this passes from the acute to the chronic state; namely, envy, jealousy, enmity, premeditated vengeance, etc. Are not these dispositions of the soul fertile in ruses, stratagems, inventions of every sort? Need we recall, to confine ourselves entirely to æsthetic creation, the “*facit indignatio versum*”?

It would be useless to enter upon any demonstration of the fecundity of joy. As for love, every one knows that its work consists in creating an imaginary being, which is substituted for the object loved; and then when the passion has died out, the lover finds himself face to face with the naked reality.

Sadness belongs by right to the group of depressive emotions; and yet it exercises just as great an influence on invention as does any other emotion. Need we mention that melancholy and even profound grief have proved a source of their noblest inspiration to poets, musicians, painters, sculptors? Is there not an art that is openly and avowedly pessimistic? And this influence is not restricted solely to æsthetic creation. Who will venture to assert that the hypochondriac and the demented victim of paranoia are totally devoid of imagination? Their morbid temperament is the source, on the contrary, from which their soul-tormenting inventions incessantly surge forth?

Finally, this complex emotion which we term the "self-feeling," which can be reduced in a final analysis to the pleasure of affirming our own strength, the agreeable sense of its expansion, or the painful sensation of force that is fettered and enfeebled, brings us directly to those motor elements which are the fundamental conditions of development. Before everything else in this personal sentiment, there is the satisfaction that arises from being a cause, that is to say, a creator; and every creator is conscious of his superiority over him who creates nothing. However slight his invention, it confers this distinction upon him. Although it has been repeated to satiety that the peculiar sign of creation is disinterestedness, detachment, we must admit, as Groos has so justly observed,¹ that the artist does not create for the mere pleasure of creating, but that he aspires to the mastery over other minds. Creation is the natural expansion of the "self-feeling," and the pleasure which accompanies it is the pleasure of victory.

Therefore, if we would apprehend the imagination in its full sense, without unduly restricting it to æsthetic creation, we must admit that among the manifold forms of the affective life, there is not one which cannot awaken invention. We have now to view this emotional factor at work, to consider it in the immediate processes of creation; and this brings us to the association of ideas.

II. We saw that the ideal and theoretical law of the revival of images is that of a complete reintegration; as, for example, when one is able to recall all the incidents of a long journey in their chronological order, without the addition or omission of a single detail. But this formula sets forth what ought to be, not what actually is. It rests on the assumption that man is reduced to a state of pure intelligence, and under shelter, as it were, from every disturbing element. It applies to those forms of the memory that are completely systematized, compacted into habit

(1) *Die Spiele der Thiere*. Jena, 1896. pp. 294, 301. The subject is excellently treated by this author.

and routine; but apart from such cases as these, the formula remains a purely abstract conception.

Moreover, to this law, which is of a rather Platonic value, is opposed the real and practical law which determines, indeed, the revival of images. It has been very correctly termed the "law of interest," or affective law; and its formula is as follows:—

Of every past event only the parts that interest us are revived, or are revived with more intensity than is true of the other parts. By interesting is meant that which touches us more nearly in some way or other, under an agreeable or disagreeable form. Let us note that the importance of this fact has been pointed out, not by associationists, as one might more naturally expect, but by writers of a less systematic order of thought, and strangers to this school: Coleridge, Shadworth, Hodgson, and earlier still, Schopenhauer. William James calls it "ordinary or mixed association."¹ Unquestionably the law of interest is less precise than the intellectual laws of contiguity and resemblance, and, in the meanwhile, it seems to penetrate more deeply into final causes. If, indeed, we distinguish in the problem of association these three things: the facts, the laws, the causes,—the practical law brings us nearer to the causes.

But however this may be, the emotional factor creates new combinations by several processes.

There are the ordinary simple cases with a *natural* affective basis which depend on the mood of the moment. They consist in this, that representations which have been accompanied by a like affective state subsequently tend to associate themselves; the affective resemblance reunites and brings along with it disparate representations. This differs from association by contiguity, which is a repetition of experience and of association by resemblance in the intellectual sense. Certain states of consciousness unite, not because they have formerly been given together, not

(1) *Ibid.*, vol. i, p. 573 ff.

because we perceive between them relations of resemblance, but because they have a common affective tone. Joy, sadness, love, hate, admiration, ennui, pride, fatigue, etc., may become a centre of attraction which groups representations which are not logically related to each other, but which have the same emotional sign: joy, melancholy, love, etc. This form of association is of very frequent occurrence in dreams and reveries, that is to say, in states of mind in which the imagination possesses its full liberty, and works as it lists. We can readily understand how this influence of the emotional factor, whether open or latent, naturally evokes wholly unexpected groupings, and offers an almost unlimited field for new combinations; the number of images which have a common affective stamp being very great.

Besides these, we have the rare, extraordinary cases of association which have an *exceptional* affective basis. To this category belongs colored hearing. We know that several hypotheses have been put forth as to the origin of this phenomenon. On the embryological hypothesis, colored hearing is accounted for as the result of an incomplete differentiation between the sense of sight and that of hearing; the survival, it is claimed, from a remote epoch in human evolution in which this state was the rule. The anatomical hypothesis supposes the existence of anastomoses between the cerebral centres of visual and auditory sensations. There are also two other theories; the physiological, or nervous irradiation, and the psychological, or the theory of association. The last named seems to me to account for the largest number, if not all, of the cases; but as Flournoy has said, the question is one of an "affective" association. Two sensations that are absolutely dissimilar (such as the color blue and the sound *i*) may resemble each other in the common vibration which they produce in the organism of certain privileged individuals; and this emotional factor becomes a bond of association. Let us add that this hypothesis explains also the much rarer cases of colored smell and taste, and of colored pains, that is to say, an

association of an abnormal character between determinate colors, and determinate tastes, odors, and pains.

These modes of affective association, though they appear only as the exception, are within the reach of analysis; they even seem clear, well-nigh palpable, when we compare them with other subtle, delicate cases which may be scarcely apprehended at all, and the origin of which we may suspect and conjecture rather than understand. We refer to a peculiar exercise of the imagination which is found only among the very few: certain artists, and some eccentric or unbalanced individuals. This is seldom met with outside of æsthetic or practical life. I mean those forms of invention which are wholly made up of fantastic conceptions, of some singularity carried to an extreme (Hoffman, Poe, Baudelaire, Goya, Wiertz, etc., etc.), or surprising and extraordinary sentiments which are unknown to the rest of mankind. (To this later group belong the symbolists and decadents, who are flourishing at present in various European countries, and in America, and who believe,—whether correctly or not remains to be seen,—that they are clearing the way for the æsthetics of the future.) We have to admit that we have here a very special mode of feeling, which is based primarily on temperament, and which many cultivate, and refine upon as a most desirable rarity. The temperament is the true source of their invention. But to make good our assertion, we should have to determine the immediate relations between the work and the physical and psychic constitution of the author; to observe, likewise, his peculiar moods at the moment of creation. At any rate, it seems clear to me that the novelty, the strangeness of the combinations indicates in its profoundly subjective character an emotional rather than an intellectual origin. Let us add, without pressing the point however, that these abnormal manifestations of the creative imagination fall rather into the province of pathology than of psychology.

[TO BE CONTINUED.]

HIGH EXPLOSIVES

USES IN PEACE AND WAR

CAPTAIN E. L. ZALINSKI, *U. S. A. (retired)*.



HE term "High Explosives" usually conveys to the lay mind thoughts of nitro-glycerine, dynamite and gun-cotton. Thought is rarely given to the numerous other high explosives, of which several hundred are already in existence, and whose numbers are being constantly added to.

Every day we see a notice of the invention of one or more new explosives alleged to exceed all others in terrific power, but which, at the same time, can withstand the roughest manipulation and will not explode when subjected to unfavorable conditions. Shortly after such an announcement, it is more than likely a statement appears of the formation of a company for its exploitation,—usually of several million dollars capitalization; but the chances are that it will shortly disappear from public ken. It is often found that, while the new explosive possesses some advantages, it also has many disadvantages which render it inferior to the better known of the high explosives. Again, it may be found, on submitting it to experts, that it is an old and well known explosive, either honestly rediscovered or dishonestly masquerading under a new name, usually indicative of great power and safety combined. It is then likely to be relegated to comparative obscurity, mentioned, if at all, in a dictionary of explosives.

Nitro-glycerine and the dynamites containing it are difficult to explode, or cannot be exploded at all, when of a temperature of forty degrees F. or under. To thaw these out in cold weather is dangerous and is one of the chief causes of accidents in blasting operations. This, then, is one of the incentives in the search for other high explosives, which will not be so affected by cold.

The touchstone of experience has eliminated, from practical use, most of the explosives which have been presented in such great numbers. We have left, however, as the chief explosives in use:—

Nitro-glycerine; gun-cotton; dynamites consisting of nitro-glycerine combined in various proportions with various bases; blasting gelatine; explosive gelatines and gelatine dynamites consisting of various combinations of nitro-glycerine and gun-cotton, with a mixture of saltpetre, cellulose and soda.

Besides these we have the Sprengel group of explosives. This consists of two practically inert substances, which, upon being mixed, produce powerful explosives. One of these substances is usually a liquid of the hydro-carbon class. An almost infinite variety of explosives of this class have been produced. Whenever the announcement is made of a new high explosive, insensitive and powerful, with secret ingredients, one is likely to be correct in the assumption that it is of the Sprengel group. Amongst the better known of these are the following:—

Rack-a-rock—Chlorate of potash and a liquid hydro-carbon (dead oil). Two hundred and fifty thousand pounds of this explosive was used in blasting out Hell Gate.

Bellite—Ammonium nitrate, nitro-benzole and saltpetre.

Roburite—Ammonium nitrate with chlorinated di-nitro benzol.

Hellifite—Naphtholine, phenol or benzine in fuming nitric acid.

Securite—Meta di-nitro benzole with nitrate of ammonia or saltpetre.

The composition of a sufficient number of this class of explo-

sives has been given, to indicate the variety of constituents which can be used in making high explosives of this group. They are all insensitive and require a very powerful initial explosion to educe their full power. Those having nitrate of ammonium are likely to be objectionable and not of advantage in submarine work and places where water is present, owing to the hygroscopic quality of that salt, which tends to deliquesce, unless well protected from moisture.

Two recent explosives, of secret composition, which have been much vaunted, marsite and thorite, probably belong to this class. It is thought that the latter may be usefully employed for the torpedo shell, but it is, as yet, a question whether it can be completely exploded when in large charges, so as to give an explosion of the first order.

The picric acid class of explosives deserves attention, more because of public notoriety, than of intrinsic merit. Amongst these are: Melinite, for which the French have claimed so much, and lyddite, used by the English in the South African war. These are both essentially the same, consisting chiefly of picric acid combined with nitro-cellulose, and in some cases with cresilite, a coal tar product. Emmensite, another of the picric acid class, was experimented with, but has recently disappeared from sight.

In the picric acid class of high explosives, whilst ordinarily insensitive, the presence of a small amount of any metallic oxide, produces a danger point capable of being easily exploded, which, in turn, may bring about an explosion of the entire mass. Whilst such explosions are likely to be of a low order, they are sufficient to produce great injury to property, and a possible loss of life. This class all require a very powerful initial detonation to evolve their *full* power. When not fully exploded, the picric acid explosives evolve dense clouds of suffocating fumes. But, even when fully exploded, their energy is only three times as great as that of gunpowder. In view of the great difficulty in

evoking their fullest power, it is more than doubtful if their use for shell bursting charges, secures any notable advantage over ordinary gunpowder. The use of lyddite as a bursting charge in shell used in field operations will be taken up later on.

Liquid air has been suggested as an explodent both for war and industrial blasting. While there is no question of its capability of producing, under proper conditions, powerful explosions, there are practical difficulties in its storage, keeping and handling, which militate against the chances of its being successfully used; Nothing is known of it quantitatively, and both its power and economy are doubtful.

The relative power of explosives is difficult to estimate, and authorities differ regarding it, for there is a notable difference in the results obtainable, depending on the physical conditions attendant upon the placement of the explosive and the means and method of the initial explosion. Some confinement or "tamping" is essential; the difference in the results secured between an explosion in the open and when covered, however slightly, is very great, and should be borne in mind by those using explosives for industrial purposes. The same amount or degree of tamping is not necessary for the high explosives as for gunpowder, and much needless and dangerous work might be avoided, if due consideration were given to this point of difference.

All high explosives are capable of a number of orders of detonation, running from mere ignition to the most powerful explosion. Such variations are due, not only to the initial confinement already referred to, but very largely to the character and manner of the initial ignition and explosion, which explodes the charge.

It has been found by experience that with all of the high explosives, fulminate of mercury has the property of sounding the key-note which results in educing the maximum power of the explosive. Other violent explodents have been tried, which have greater potentiality than fulminate of mercury, but which do not produce results equal to those obtained with the latter. More

than this, it is important, not only to use fulminate of mercury, but an amount sufficient to attain the best results. This will vary somewhat with the character of the high explosive which is being used; as a general rule, the more insensitive the explosive is to shock, the greater must be the initial exploding charge of fulminate of mercury, to secure the maximum action. Where the charges to be exploded are very large, an added exploder of dry gun-cotton or other powerful and easily exploded material is most helpful. The foregoing remarks apply to the amount of fulminate of mercury in the caps used in blasting operations and should be taken note of by those who are using high explosives in industrial work. The economy attempted in using a smaller and less expensive cap is really an extravagance, in that the amount of work secured is far below that obtained by using a proper sized cap of fulminate of mercury. Even if large caps are more expensive, the cost is trifling compared to the cost of labor involved in boring numerous holes and of the explosives used.

The position of the point of initial detonation in the charge is of great importance, in order to secure maximum effects. The best position is on the side farthest from that at which the maximum effects are desired, while the minimum effects result when the initial explosion takes place at the point nearest to the position for maximum action.

According to the best authorities, the following table is given as showing the relative force of the various high explosives, submarine work excepted, gunpowder being taken as one:—

Gunpowder,	1
Gun-cotton,	5.5
Nitro-glycerine,	12
Explosive gelatine,	14
Blasting gelatine,	16
Dynamite No. 1,	10
Bellite (Sprengel),	6
Roburite (Sprengel),	3
Melinite,	3
Lyddite,	3

Besides the power of the explosives for equal weights, some

consideration should be given to their *specific gravity*. With a higher specific gravity, a larger quantity can be placed within a given cavity. For instance in blasting, smaller holes are required and less drilling is necessary when the explosive is dense and also powerful. This is secured, particularly in the use of blasting gelatine, gelatine dynamites, and forcite—which are all powerful and of considerable density.

Somewhat anomalous results have been obtained in measuring the force of various high explosives under water. One of the most notable of these is that when exploded under water, dynamite No. 1, consisting of seventy-five per cent. of nitro-glycerine, combined with twenty-five per cent. of inert material, will produce a force of 100,—nitro-glycerine, containing $33\frac{1}{3}$ per cent. more of active and explodent material produces a force of only 87. If the forces exerted were in the ratio of the amount of active explosive present, the ratios would be as 87 to 116 in favor of the nitro-glycerine. In this case, the lesser is greater than the whole. This may be accounted for by the fact that while nitro-glycerine is a solid mass, the nitro-glycerine in the dynamite is spread over the surface and cavities of the kieselguhr (the absorbent material), and thus presents more surface for inflammation and explosion. In other words the time element is the determining element which governs the energy realized.

Indeed, this appears to be evidenced in other cases. Considering simply the chemical constituents of various explosives, the actual energy secured is frequently less than would be anticipated from their *constitution*, and, in many cases, it is greater. The time element is, therefore, of very great importance as a determinant of the effects realizable.

This is notably seen in the case of modern smokeless powders, (consisting of nitro-glycerine and gun-cotton), which may be used in guns, securing much lower maximum pressures than would be the case, if the constituents were separately exploded in their normal state. It appears that these constituents, however,

although not changing in the least the chemical elements present, are in such physical form, that the ignition goes on more slowly.

Miners, especially those of foreign birth and education, are strongly prejudiced against the use of electricity to secure simultaneous ignitions, which are best for blasting operations on a large scale. They prefer the ordinary Bickford or other burning fine fuses, and it is difficult to persuade them to try other means. If induced to try electrical ignition, it is not unlikely that first attempts fail and a return is had to the former dangerous and wasteful methods.

Electrical ignition is safer in blasting, and the simultaneity of action secures from twenty to twenty-five per cent. more work than explosions effected in the ordinary way.

In driving tunnels or sinking shafts, the centre is first blasted and the "key," as it is called, must be removed by a preliminary blast. The rock surrounding this is then removed by more blasts. In some cases further extension of the tunnel or shaft, in cross sectional area, is made by a second and third series of secondary blasts. As the shaft must first be cleared of noxious gases emanating from the previous explosions, much time is lost. The use of an electrical delay action fuse, recently devised, aids in expediting this. Fuses are made so as to explode the fulminate of mercury of the cap at different intervals, time delays of the same period being placed in the blast holes which should explode at the same time. The centre hole, to break out the "key," has an instantaneous acting fuse, the series of holes adjacent to this have the shortest delay fuses, the next longer delays and so on to as many series as may be desirable. These fuses are all connected and ignition takes place simultaneously. But while the centre or "key" charge explodes at once, the different surrounding series explode one set after the other, as each preceding one, has by its explosion removed the portions of rock and cracked it towards the centre. At the same time they have cracked and shaken the portions of rock, adjacent, towards the

outside and thus made it easier for the next series of explosives to do their work effectively.

In arranging for simultaneous electrical ignitions it is important, first, to thoroughly cleanse all wires where they connect with each other; second, to have available at least three times the current requisite for the ignition of a single fuse.

In arranging for rock blasting and demolitions within city or town limits, very small charges closely placed and simultaneously ignited, secure the best desired results. The great shock and danger due to flying fragments is avoided. This method is especially commended in the destruction of buildings, and so forth, where it is also the desire to avoid, as much as possible, all injury to the building material.

The use of high explosives for military purposes was at first confined to submarine torpedo defenses and to automobile and dirigible torpedoes. But in recent years, they have been used more or less as bursting charges for shell fired from cannon. Small charges used as bursting charges, have been frequently successful, causing the announcement that a high explosive had been fired out of ordinary guns with full powder charges. But it is rarely mentioned that the charge explosive thrown is relatively small, and that the results obtained are hardly greater than those secured by the regular black gunpowder bursting charge. Nor is it heralded when premature explosions burst the guns. The danger of premature explosion increases with the ratio of the charge, to the total weight of the projectile. A charge as large as ten pounds may possibly be fired in a shell weighing a hundred pounds, but it may not be assumed, with equal certainty, that, when the charge attains a weight of, say thirty or forty pounds, in a shell weighing a hundred pounds, it will be equally safe. In all cases it receives the shock due to the "set-back" of the charge, which, in turn, is in the ratio previously indicated. That is to say, a charge of ten pounds will receive about nine per cent. of the shock of set-back when fired in a shell weighing one hundred pounds, but a charge

of thirty pounds will receive a shock of twenty-three per cent. if fired in a shell of the same weight. If placed in a shell weighing seventy pounds the shock of set-back to the explosion would be thirty per cent. of the entire shock or blow. This set-back shock must not approach too closely the point where explosion may take place. Many apparently slight conditions will bring about a state where explosion is more easily produced than under normal conditions. The danger point may, however, be determined with reasonable assurance, for each kind of explosive under varied conditions of packing, and so forth. A large factor of safety should then be introduced both in proportioning and arranging the bursting charge.

Again, very insensitive high explosives are used in firing from powder guns. But it is no use to fire large charges of explodents, if they cannot realize the full potentiality of which they are capable, when properly exploded. It is, therefore, necessary to have a proper initial detonating fuse. As has been previously indicated, that detonating fuse must contain fulminate of mercury, if the charge is very large it is necessary, in addition to this, to have an exploder of dry gun-cotton, a material which is also somewhat sensitive to shock. The result is either a premature explosion within the gun and wreckage of the same, or successful firing from the gun with unsuitable fuses, which secures little material effect.

Outside of the field of submarine mining and ordinary torpedo action, there seems to be but a vague conception as to the most advantageous uses of the high explosives in operations of war.

In throwing the ordinary armor piercing shell, the cavity for the bursting charge is comparatively small, and the effect, when successfully carried through armor plate, is not of a sufficient character to compensate for the risks assumed.

On the other hand, where the cavity is increased, so that the bursting charge is greater, the shell is not likely to perforate any notable thickness of armor, and secure the results which might

have followed by the explosion of a large charge behind the armor. Again, the explosion of the increased charge, *however large* on the outside of an armor plate, does not materially affect its integrity. This has been fully demonstrated. It cannot disrupt armor. In short, the high explosive shell is of no practical value in attacking armor. The over-water hull of a ship could be penetrated by the ordinary projectiles and attain the maximum effects with a bursting charge of black powder. It would seem, therefore, that the over-water field attack with high explosives may well be abandoned to the ordinary projectiles. More attention should, in future, be given to the attack of the ship in the part where it is really vulnerable, that is, the under-water hull. Notwithstanding the enormous expenditures by all nations for movable torpedoes; the results secured thus far have been so slight that it justifies the trial and use of other weapons suited for submarine attack. The torpedo gun projecting torpedoes aerially appears best suited for this purpose. To secure this it is desirable to have the torpedo shell carry bursting charges of high explosives in large quantities. This is particularly necessary because of the modern cellular subdivision of the ship's hull. Such subdivision is continually increasing, and the hull is strengthened in order to meet the possibilities of under-water attack by ordinary automobile and dirigible torpedoes. Torpedo shells containing large charges, exploding against or near the under-water hull, are more likely to obtain decisive results, than much larger charges exploded superficially against the over-water hull.

To successfully throw charges large enough to be effective, it is necessary to have a large cavity for the charge. Thus, the walls of the shell must be very thin. It is out of the question to fire such thin-walled shell, containing the charge of high explosive with high velocities. Such can only be obtained with high pressures, likely to either burst the charge within the gun by shock or by breaking the shell. The attack of the over-water

and under-water hulls must be carried on distinct lines and with the weapons made suitable for each. To have the torpedo shell enter and explode under water, it is necessary to use a low velocity, so as to insure the shell entering the water at such an angle as to avoid the irregularities of flight due to possible ricochet. Low velocities and high angles of fire are, therefore, essential, both because of the weakness of the thin walls of the shell, demanding lower pressures in the gun bore, and because of the necessity of the shell surely diving into the water. Such torpedo shell may obtain results not possible from the direct fire of ordinary guns. The fields of action of the two weapons are entirely different, and comparisons cannot be properly made.

Not only are results secured by direct hits of the under-water hull, but fatal results may be secured even when the explosion takes place some feet removed from the hull of the ship attacked. This distance increases naturally with the charge. But the danger radius does not, by any means, follow in the proportion of the charge. The danger radius in the charge of a hundred pounds of gun-cotton would be about sixteen feet; one hundred pounds of blasting gelatine twenty feet, and a charge of five hundred pounds of blasting gelatine would have a danger radius of approximately forty-five feet. Roughly speaking the danger radius may be taken to be in the direct ratio of the square roots of the weights of the exploding charges. This increase of the zone, wherein a shell might be effective, very materially increases the chances of securing the decisive results sought for.

Another element which favors the high angle fire, lies in the fact that when firing at the higher angles, a considerable change of angle of elevation of the gun does not affect the range as much as does a relatively small elevation of the flat trajectory guns.

This is especially applicable to the torpedo gun when afloat, as on the *Vesuvius*. It is argued that accuracy of result cannot

be obtained on shipboard with torpedo guns owing to the unstable platform.

The ordinary armament guns of our ships are affected with this same "*mal-de-mer*." The entire number of rounds fired from all United States ships engaged at Santiago was 9474. The entire number of hits discoverable in the Spanish ships was 124 or one and three tenths per cent. The entire number of rounds fired from 13, 12, 8, 6, 5 and 4 inch guns was 1300. The entire number of discoverable hits was 45, or three and forty-six hundredths per cent. The 4, 5 and 6 inch have been aggregated so that it is not possible to separate them for purposes of comparison. The number of these was 27. It is fair to assume, however, that the 5 and 6 inch guns (of which 895 were fired), secured the greatest number of these hits.

It may be of interest to consider more in detail the number of fires and number of hits obtained with the other three calibres.

NO. OF FIRES.		NO. OF HITS.	PER CENT. OF HITS.
13"	47	86.....	3.....
12"	39		
8"	31913.....4.07
	16.....4.0

The hits secured by 13 and 12 inch projectiles are not distinguishable, and so have been combined in the foregoing computation.

Enough has been given to show that the objections advanced against the guns of the *Vesuvius* have been shown to apply to other guns.

The pneumatic torpedo guns have demonstrated their ability to fire accurately from a stable platform, and it is but fair to allow some measure of accuracy accorded to other guns.

I have endeavored to show that torpedo guns may secure results under favorable conditions of unstable platform, not ordinarily considered. These briefly lie in the fact that the torpedo

shell having an enlarged zone, a direct hit is not demanded, and that even a notable change of angle of elevation of as much as one degree does not necessarily cause the projectile to be thrown outside of its effective danger zone, it being considered that the target is of the length and breadth of a ship with the additional area of the danger zone.

The unfortunate absence of the *Vesuvius* at the battle of Santiago prevented a practical exhibit of the possibilities of the system in naval combat,—and a long time may elapse before such an opportunity occurs again.

But the writer does not hesitate to affirm that torpedo guns, throwing very large masses of high explosives, will be used in future warfare. Masses from 1000 pounds to one ton will be thrown, and such large charges will secure increased danger zones. They will also produce such a large sphere of compression that these will intersect the sides of the ship over large areas, probably causing the hull to be disrupted and two or more compartments broken into. In such a condition, the ship, especially if heavily armored, would sink. The placement of a battle-ship, *hors-de-combat*, by a single projectile from even the one-hundred-ton gun, cannot be assumed so assuredly, as by the successful placement and explosion of a single torpedo shell of large calibre.

Even granting that there might be a smaller percentage of hits with the aerial torpedo shell, the absolutely decisive results secured when a hit is made should lead to acceptance of chance of smaller percentage of hits.

The writer does not, however, concede such inferiority. Expenditure of ammunition, and the practical demonstration of actual warfare, will alone satisfy doubters. Superhuman certainty of results is not claimed, but great chances of success are emphatically affirmed.

The torpedo guns as used on the *Vesuvius*, and the vessel

itself, are not assumed as being the best examples. Many improvements have suggested themselves, as might be expected. The first of a new type rarely embodies the full measure of perfection which practical experience suggests.

It may be confidently said that a vessel of the Katahdin type, with an even greater armor protection and stronger underwater hull, having a speed of not less than twenty knots, armed with torpedo guns of from sixteen to twenty inch calibre, would be the most formidable type of vessels afloat for harbor defence. Such would present the maximum possibilities of power, inherent in the use of aerial torpedoes for naval purposes. It would surely secure possibilities of results not attainable by the ordinary surface torpedo boats. The submarine boat would alone approach it in formidable possibilities, its invisibility serving it in lieu of armor protection. But valuable as such would be, they would not attain the full measure of aggressive power that both the armor and the speed of the modified Katahdin type of vessel mentioned would give.

The Holland Submarine Boat will, undoubtedly, secure increased aggressive power and possibilities, by having torpedo guns as part of its armament.

The use of the torpedo gun on vessels of the Katahdin class, will give them the equivalent of a powerful ram one thousand yards in length and possibilities of securing a blow with this ram, which is not possible with its own power.

High explosives have been used as bursting charges for shell of small calibre guns, used against troops in field operations. The first attempts in this direction were by the French and German, who used bursting charges of melinite and gun-cotton, the latter using the gun-cotton. The Germans, finding that they could not reach by direct artillery fire, troops that were under cover behind breastworks or field entrenchments, thought to reach these by using the torpedo shell and shrapnel with the gun-cotton

bursting charge. It was expected that the great power developed by the gun-cotton would overcome the onward movement of the fragments of the shell, and would throw many of them backward and down. It was intended that the shell fuse should be timed to burst when just over, or immediately beyond the breastworks, and flying backwards and downward, successfully reach the intrenched and otherwise covered troops. Success was dependent on accurate knowledge of the range and a corresponding accurate action of the time fuse.

This attempt and that of the French to secure similar results with melinite, has been found to be futile, and other methods of attacking intrenched troops have to be sought for. The lyddite shell of the English, mentioned so much in the operations in South Africa, have likewise been generally ineffective, notwithstanding the attention given to the matter by the press.

Torpedo shell, containing relatively large charges of gun-cotton and melinite, has also been tried in the attempt to demolish entrenchments, but the results have not been promising, and they are not likely to be used for field operations.

Lyddite, similar to melinite, and other insensitive high explosives, is very difficult to explode so as to secure its full power. When not fully exploded, and an explosion of a lower order is secured, dense yellow and noxious fumes are emitted. These fumes are often fatal or injurious to those in the immediate vicinity, but the area over which this is effective is very small. Not alone have there been many cases of these incomplete explosions, but there have been still more cases of entire failure to explode. This was suspected from the first, but information from reliable sources, observing the course of events with the Boers, fully confirm this. It is said that the Boers have lately been relatively indifferent, when subjected to the fire of the lyddite shell, as they have found that there was considerable immunity from fatal results.

High explosives were also used in the so-called dynamite gun of the Sims-Dudley type, used in Cuba. There is no doubt that the moral effect may at first be considerable on an imaginative people like the Spaniards. But reports of Spanish officers, who are competent to report on such matters, indicate that this had largely passed away.

It was found, in the first place, that the range was so short that the gunners were exposed to the fire of the Mauser rifles in the hands of the Spanish troops, long before they could reach a point from where they could reach the enemy. The action of the shell being entirely local, the radius of danger was much less than when the ordinary shrapnel shell was exploded.

It followed that, to produce effective results, it was necessary for the shell charged with high explosives to land in the midst of a compact body of troops in order to produce much result. There was no question that in such cases the effect was most horrible, in that the men immediately exposed to the blast of explosion were dreadfully mangled. This, however, is not what is sought for in war. In the first place, it is not more than necessary to place a man hors-de-combat; and to use a ton to kill one person, instead of one hundred and fifty grains, does not seem quite logical or necessary. Again, it is much better to wound an enemy than to kill him, inasmuch as a wounded man requires several men to take care of him. The use of the guns, with their ammunition, involved considerable danger to those using them. The shell might be exploded by the enemy's fire as well as by careless handling and the accidents incidental to transport in the field. When a full explosion takes place, the walls of the shell are so connected that the small fragments lose their power within a short distance. The danger radius is therefore very small.

The ordinary powder-charged shrapnel is safer to carry and handle, gives a wide conical sheaf of man-killing and disabling

fragments, covering a space fifty yards in front of the point of its explosion. The fragments are numerous, but sufficiently large to kill or disable men and horses hit by them.

It does not, therefore, appear that the present conditions indicate it to be advisable to use high explosives in shell or shrapnel for military operations in the field. New developments must be made before it is likely that they will be used extensively.

They are, however, sure to be used in harbor defences and in aerial torpedoes projected by torpedo guns.



INDEX.

NOTE: *Italic type indicates title of a book.*

- Aboulfazl, 252.
- Achelis, 218.
- Actor-manager, *The*, 334.
- Actors, American, *See* Theatrical syndicate.
- Association of English, 338.
- knighted, 333.
- Society, *The*, 109.
- Adams, Maude, 116.
- Africa, tribal religions of, 604.
- races, *See* Institution of Society.
- Aggregation of man, 378.
- Air, liquid, 127.
- Air-currents, motion of, 45.
- cause of whirling, 46.
- law of, 46.
- Akbar, 252.
- Alarm, influence on primitive man, 371, 385.
- Alcohol, discovery of, 287.
- Alcoholism, 256.
- Aldrich, T. B., 106.
- Allen, G., 221.
- Alliances of early man, offensive and defensive, 385, 387.
- Alternating currents, 130.
- Aluminum, 129.
- American art, 85.
- architecture, 91.
- drama, 99.
- (U. S.) people, physical statistics, 262.
- plays, *See* Theatrical syndicate.
- Anacharsis, 251.
- Ancestorism, 607.
- Animism, 581, 582, 594.
- Appellate Court, N. Y., 91.
- Arabischen* Heidenthums, Reste, 229.
- Arabs, 247.
- Archery, 248.
- Architecture, American, 91.
- Argon, 123.
- Armstrong, Gen. S. C., 351.
- Arnold, T. W., 230.
- Art as a Means of Expression, W. J. Stillman, 133.
- Art, *See* also Venetian, Byzantine, Decoration, etc.
- centralization of, 86, 88.
- Art, decorative, 141, 142.
- definition of, 134.
- division of labor in, 489-91.
- exhibitions, 87.
- Fine*, as Decoration, R. Sturgis, 463.
- fine, 133.
- in America, 85.
- in the industrial exhibitions, 90, 91.
- influence of patronage on, 86, 89.
- its need of the public, 90, 95.
- Japanese, 141.
- pottery, 87.
- present condition of, 151.
- schools, 141.
- societies, 94.
- séailles, description of, 30.
- Union, 97.
- Artists, Indian, 84.
- Chinese, 84.
- Japanese, 84.
- French, 86.
- Organization Among American, C. De Kay, 83.
- Arthur, Julia, 114.
- Artillery, modern, 439.
- Association, 663.
- of ideas, 663.
- theory of, 674.
- Asteroids, 556.
- Astronomical measurements, 550-2.
- Astronomical Photography, H. Jacoby, 544.
- Atoms, study of, 131, 498, 500, 505, 515.
- charged, 506-8.
- psychic, 660.
- Atrophy of organs, 248.
- Aust, E., 234.
- Australia, native tribes of, 227.
- Australian religion, 227.
- Babylonia* and Assyria, Religion of, 228.
- Bacon, F., 252.
- Balloons in war, 441.
- Balsac*, Honoré de, Personal Opinions of, 309.
- Balsac*, as he was, 309.
- Balsac*, Some Recent Literature on, W. P. Trent, 309.

- Balzac, character of, 313.
 Ballet, The, 196.
 Ballot, in the North, respect of the, 341.
 Bancroft, Squire, 331, 332, 333.
 Basques, 237.
 Bayle, 2.
 Bengalese, 252.
Bei den Monchen auf dem Athos, 233.
 Béranger, H., 38.
 Biblical religions, 228, 229.
 Bibliography of religions, *See* Toy.
 Biograph, 128.
 Biologist, The, 356.
 Blasting, 681.
 use of electricity in, 682.
 Boards of health, 626, 633.
 Boers, 437.
 preparations of, 436.
 tactics of, 437, 443, 445.
 Boileau, 2, 21.
 Book of the Dead, 609.
 Bora mysteries, 581.
 Bowdoin College, 87.
 Bourget, P., 39.
 Brahma, 587, 589.
 Brazilian indians, 370, 386.
 Brinton, D. G., 225, 226.
 British people, 12, 256.
 colonies, 458.
 British Assoc. Adv. Sc., 28.
 Brooks, J., 102.
 Brown, R., 233.
 Brunetiere, 4, 15, 309.
 Bubonic plague, 643.
 Budde, K., 228.
 Buddhism, 251, 607.
 Burne-Jones, Sir E., 159.
 Buonarrotti, 154.
 Bushmen, 253.
 Byzantine art, 156.
 empire, 247.
Camoens, 252.
 Canals, inter-oceanic, 447, *et seq.*
 Canon law, 404.
 Canstadt race, 236.
 Cantlie, J., 278.
 Caravaggio, 141.
 Carton, 332.
 Castries, de, H., 230.
 Cavalry tactics, 442.
 Cellini, 10.
 Cervantes, 252.
 Charbonnel, 38.
 Charles, R. H., 229.
 Chateaubriand, 2.
Chavannes, Puvis de, 486.
 Cheyne, T. K., 228.
 Chicago, Opera in, 188.
 Children, *See* Degeneration.
 British, 263.
 China, 181, 251.
 artists, 84.
 degeneracy of governing classes, 254.
 Japanese war, 181.
 religion of, 398, 600, 613.
 Cholera, 249.
 Choshu clan, 169.
Church of England, Roman canon law in, 404.
 Church history, 405.
 Cimabue, 156.
 Circumcision, 227.
 City government, *See* Government.
 evils of American, 621, 622.
 Civil Service laws, 629.
 Civilization, progress of, 247.
 Climate, definition of, 77.
 changes in, 77, 78.
 Classicists, The, 422.
 Clayton-Bulwer treaty, 449, 454-6.
 Clouds, formation of, 519-22.
 dust, 520-22.
 mist-globules, 523.
 Cole, Thomas, 139.
 Columbia, treaty with, 448.
 Commercial unions, *See* Nicaraguan Canal.
 Composers, Great, *See* Opera in America and Europe.
 Confucius, 251.
 Congressional library, 91.
 Consumption, 634.
Constitutional History and Constitution of the Church of England, 405.
 Continents, origin of, 62, 64.
 height of, 71.
 Co-operation, 383-93.
 Copper, 129.
 Coral reefs, 62, 80.
 Corea, 181.
 Conried, H., 100.
 Coventry, Eng., 408.
 Creation, The, 226.
Creative Imagination, Th. Ribot, 648.
 Cretinism, 272.
 Crime in United States, 274.
 Criminal, perpetuation of, 269.
 characteristics of, 269.

- Critic, The, 8, 15, 18, 23, 40.
 art, 139.
- Criticism, dramatic, 5.
 description of, 2, 7, 8, 9.
 impersonal, 25.
 literary, 1.
 masters of, 32, 33.
 scientific, 11, 24, 31.
 true goal of, 15.
- Cro-Magnon, 236, 237.
- Croke, W., 227.
- Cromwell, Oliver, 417.
- Crookes, W., 128.
- Crusades, children's, 245.
- Cumart, 234.
- Cyrano de Bergerac*, 434.
- Cyrus, 251.
- Daly, Augustin, 99, 166.
- Darwin's theory of early man, 372.
- Daudet, A., 427.
- Davenport, 109.
- Da Vinci, 154.
- Death rate, 253.
 in France, 261.
- Deaf-mutes, 271.
- Decoration, Art, 133.
 primitive, 463, 468.
 in Europe, 472.
 in Japan, 469, 472.
 human figure as, 480.
 mural, 481.
- Degeneration: A Study in Anthro-
 pology, W. W. Ireland, 238.
 progressive, 275.
- Dental surgery, 126.
- Deschamps, 37.
- Desjardins, 39.
- De Stael, Madam, 2.
- De Vogue, 39.
- Diet, influence on man, 254.
- Dionysos and immortality, 233, 591.
- Disease, amelioration of, 258.
 contagion of, 634.
- Dissociation, 657.
- Doko tribe, 376.
- Domesday Book, 401, 402, 407.
Book and Beyond, 401.
- Don, Sir Wm., 333.
- Doumic, 34.
- Drama, *See* Irving, Ibsen.
 American, 99.
 in France, 6, 7, 22, 420.
 romantic, 22.
 commercial side of the, 100.
- Dramatic authors, *See* French Drama.
- Dreams, 655.
- Drugs, action of, 645.
- Duccio, 156.
- Duff, Grant, 283, 284.
- Dumas, 420 *et seq.*
- Durand, 139.
- Dust, *See* Clouds.
- Dynamite, 676, 681.
- Earth's crust, thickness of, 60.
 cooling of, 49.
 influence of rain on, 50, 56.
 interior, 60, 75.
 shrinkage of, 59.
 surface, 42.
 the formation of, 47.
- Ecclesiastical writers, 405.
- Economics, in study of society, 361.
- Economic geography, 373.
 psychology, 363.
- Economists, School of, in Eng-
 land, 282.
- Economy, definition of political, 285.
- Egypt, art, 468.
 religion, 230-32, 600.
- Elections, Southern, 346.
- Electric charge, 503.
 fuses, 682.
 transmission of, 508.
- Electrodes, 508.
- Eleusinian mysteries, 219.
- Elements, motor, 650-53.
 affective, 669.
 affective, law of, 673.
 manifestation, 653.
- England, 12.
 before the conquest, 401.
 Normans in, 407.
- English History, Recent Writing on*,
 E. P. Cheyney, 399.
- English opera, 198.
 yeomanry, 248.
- England in the Age of Wycliffe*, 416.
 Church of, 404.
 Commonwealth, 417.
 foundations of history, 414.
 histories of, 414.
Law, English, History of, Before the
 Time of Edward I., 400.
 local government of, 627.
 the manor in, 401.
 mistakes in Boer war, 437.
 navy, 408.
 Peasants' Rebellion, 416.
- Erlanger, 101.
- Esquimaux, 369.

- European Zollverein, 459.
 Evaporation from earth's surface, 56.
 Evolution, 356.
Explosives, High, E. L. Zalinski, 676.
 Sprengel, 677, 680.
 Ezekiel, 251.
- Factor**, intellectual, 656.
 emotional, 668.
- Family**, The, *See* Institution of Society.
 morality in, 589.
- Faguet, 25, 26, 31.
- Federal educational laws, 351.
 election laws, 351.
See Force Bill.
- Ferishtah, 252.
- Filmer, Sir Robert, 367.
- Finance, Japanese, 176, 179.
- Fiske, John, criticism of, 370, 383.
 on origin of family, 367, 369.
 Mrs., 105, 107.
- Flagellants, 245.
- Folklore, 234.
See Indians.
- Fontenelle, 2.
- Food supply, influence on organizations of man, 377.
- Force Bill, 346.
- Formication, 651.
- Fowler, W. W., 234.
- France, M., 3, 4, 7, 8, 15, 35.
- Franks, 241, 247.
- Frazer, I. G., 227.
- French* Criticism, Later Evolutions of, Edouard Rod, 1.
Drama at the End of the Century, Brander Matthews, 420.
 drama, 6, 7, 22, 420.
 effect of foreign influence on, 429.
 literature, 1.
 opera, 201.
- Frohman, 113.
- Fromentin, 658.
- Frontal attacks, *See* War.
- Fry, H. E., 117.
- Fuminate of mercury, 679-82.
- Galileo**, 252.
- Gall-stones, 641.
- Gasquet, Francis Aiden, Father, 234, 405.
- Gathas, 232.
- Gelatines, as explosives, 681.
- Geographers, The, 357.
- Geological forces, origin of, 43.
- German opera, *See* Opera in America and Europe.
- Germanic people, 239, 241.
- Germans in Texas, 350.
- Gifford lectures, 222.
- Gillen, F. J., 227.
- Girardin, 21.
- Glaciers, 58.
- God, conception of, 222, 223, 226.
 Evolution of the idea of, 221, 579.
- Gods, worship of, 580, 589, 590-91, 593, 595, 600, 610.
- Goebel, *See* Kentucky.
- Goodwin, 104, 105.
- Goths, 241.
- Gozzoli, 156.
- Gravitation, 44.
- Great lakes, neutralization of, 447.
- Great men, causes not effects, 13.
- Greek, race, 237.
 degeneration of the, 240, 255.
 art, 153.
- Greece, religion of, 233, 584.
- Greenwall, 101.
- Giotto, 141, 153, 156.
- Griechen*, Die Jenseitshoffnungen der, und Romer nach den Sepulcralinschriften, 233.
- Grundy, S., 332.
- Gruppe, O., 232.
- Guizot, 2.
- Gulf Stream, 56.
- Gun-cotton, 676-80.
 powder, 678.
 smokeless, 681.
- Guns, powder, 684.
 shrapnel, 687-91.
 Sims-Dudley, 691.
 torpedo, 685, 687.
- Hackett**, 113.
- Hampton Institute, 351.
- Hanska, Mme., 315.
- Hardy, E., 231.
- Hare, John, 331.
- Harris, Sir A., 332, 333.
 Townsend, 171.
 Miss M. Dormer, 408.
- Hayman, 100, 102, 105.
- Hay-Pauncefote Amendment, 456.
- Health statistics, 257.
 causes of ill, 276.
- Heat, development of, 44.
 influence on life, 50.
 increase of, in earth's crust, 74.
- Heger, 270.

- Hellenische*, Über vor—, Gotter-
culte, 232.
- Henley, W. E., 309.
- Hennequin, 11, 13, 15.
- Heredity, 28, 84, 269, 275, 578.
- Hernani*, 421-24.
- Herne, J. A., 105, 107.
- Hibbert lectures, 222, 583.
- "Hide," The, 401.
- Hill, Octavia, 304.
- Hindu-Aryan religions, 231.
- Hindu cult, 589-91.
- History, The study of, 399-415.
its place in criticism, 27.
- Holland submarine boat, 689.
- Hospitals, 535-36.
- Houtsma, M. T., 230.
- Howells, W. D., 106.
- Hunger, influence on early man, 363.
- Hugo, V., 22, 23.
- Human sacrifice, 590-593-95, 613.
- Huns, 254.
- Hunt, The, influence on social organ-
izations, 388.
- Hunt, Holman, 157.
- Hypnotics, 645.
- Ibsen, Henri, as dramatist, 430-32.
- Idiocy, 271.
- Ignition, electrical, 682.
- Images, 657-59.
law of, 660.
- Imagination*, Creative, Th. Ribot, 648.
- Imagination, 137, 656.
evils of, 350.
subjective, 654.
- Immunity, 639.
- Impressionism in art, 148.
- Indian *Sati*, 594-96.
- Inertia, 505-6.
material, 661.
mental, 661.
- Infanticide, 588.
- Infantry, mounted, *See* War.
- Infants, feeding of, 278.
- Infection, *See* Diseases.
- Influenza, 250.
- India—*The Tribes* and Castes of the
N. W. Provinces and Oudh, 227.
cholera in, 249.
religions of, 231.
effect of climate on Europeans, 253.
- Indian artists, 84.
- Indians*, Traditions of the Thompson
River, 226.
- Indische Religionsgeschichte*, 231.
- Individual*, The World and the, 225.
- Ingram, 283.
- Insanity, statistics of, 274.
- Institutions, local, in Japan, 175.
modern study of, 399.
- Intrenchments, *See* War.
- Invention, 671.
- Environment, influence of, 14, 33.
- Ionic charge, *See* Atoms.
- Irish race, 252.
immigration, 349, 354.
- Irving*, Henry, Clement Scott, 321.
H., 107, 113.
- Ishtar, 592.
- Islam*, The Bible and, 230.
- Islamic religion, 229.
- Isolation of man, 376.
as economic factor, 376.
- Israel*, Religion of, to the Exile, 228.
- Itagaki, Count, 178.
- Italy, 10.
- Italian art, 144.
artists, 154.
opera, 197, 198, 202.
- Ito, Count, 178.
- Jackson, A. V. W., 232.
- Jaini sect, 251.
- James, William, 662, 664, 673.
- Japan*, Entry Into the World's Politics,
Garrett Droppers, 162.
- Japan, 162.
Christian religion in, 165, 166.
commercial progress, 164, 166.
Dutch in, 166.
evolution of, 163-64.
fall of Shogunate, 172.
feudal system in, 174.
finances of, 176, 179.
first European contact with, 165.
foreign interference with, 172.
historical sketch, *See* Japan in the
World's Politics, 173.
local government in, 175.
opening of, 170.
war with China, 181.
- Japanese art, 141.
artists, 84.
characterization of the, 180.
consular courts in, 183.
Constitution, 178.
institutions, 175, 177, 178.
land tenure, 177.
origin of, 254.
railroads, 176.
religion, 589-602, 607.

- Japanese schools, 177, 179.
 tariff, 183.
 telegraphs, 176.
 treaties with foreign powers, 167,
 169, 171, 182, 183, 184.
- Jastrow, M., 228.
- Jefferson, Jos., 105, 107.
- Jeremiah, 251.
- Jeremias, F., 230.
- Jevons, 219.
- Jevons, Stanley, 296.
- Jewish Religious Life After the Exile*, 228.
- Jones, H. A., 332.
- Jupiter, 45.
- Kaffirs, 580.
- Kali, *See* Hindu cult.
- Kalidasa, 252.
- Katahdin, The, 689.
- Kaufmann, 233.
- Kean, Charles, 330, 331.
- Kendals, The, 113.
- Kendal, W. H., 331.
- Kentucky, settlement of, 561.
 assassination of Goebel, 571-72.
 early inhabitants of, 562-64-66.
 election of 1895, 568.
 result, 569.
Social Conditions in, William
 Lindsay, 560.
- Kepler, 252.
- Kern, O., 233.
- Kidd, view of morality, 606.
- Kimberly, importance of, 437.
- Kipling, R., 309.
- Klaw and Erlanger, 101.
- Knights, actors made, 333.
- Krishna, 610.
- Laboratories, 359.
 need of, 540-41.
- Lackaye, W., 106.
- LaFarge, 96.
- Lake-dwellings, 237.
- Lamartine, 23.
- Land measure, 401.
- Land tenure, *See* Japan.
See Domesday.
- Lang, A., 223, 581-85, 599.
- Langley, 128.
- Language responsible for religion, 233.
- Lanson, 39.
- Law*, History of English Law Before
 the Time of Edward I., F. W.
 Maitland.
- Lemaitre, 6, 7.
- Lettres a "L'Etrangere,"* 309.
- Library, circulating, 206.
- Liebler and Co., 113.
- Life*, a Critical History of the Doctrine
 of a Future, in Israel, in Judaism,
 and in Christianity, 229.
 animal, 235.
- Light, affected by magnetism, 129.
- Limestone, 81.
- Lines of force, 503.
- Liquid air, 127, 679.
 military purposes, 683.
- L'Islem*, 230.
- Locke, John, 365.
- Lombroso, 269.
- Lord, 92.
- Lorenz, 129.
- Louisiana, negro in, 345.
- Love, influence on early man, 366.
- Lyddite, 678, 690.
- Magnetism, effect of, in light, 129.
- Mahan, Alfred T., Capt., 411-13.
- Mahavira, 251.
- Mahdism, 230.
- Mahométisme*, Le, 230.
- Maitland, Frederick W., 400.
Domesday Book and Beyond, 401.
History of English Law Before the
Time of Edward I., 400.
Roman Canon Law in the Church of
England, 401.
- Makover, Felix, 405.
- Malthusian devices, 278. **ETC**
- Man as economic individual, 356.
 condition of, in Europe, after the fall
 of Roman empire, 244.
 early character of, 588.
 his influence on the earth's sur-
 face, 81.
History of Mankind, Ratzel, 379.
 influence of diet, 254.
 influence of poverty on, 252.
 primitive, 371.
 stature of early, 236.
 stature of mediæval, 247.
- Manor, origin of the, 401-3.
 land tenure, 401.
- Manouvrier, 270.
- Mansfield, Richard, 100, 104, 105, 107.
- Mantras, 369.
- Marconi, 123.
- "*Marriage Blanc*," 7.
- Marriage, 587.
 rate, 260.

- Marriage, institution of, 367.
 Mars, 78.
 Matimba indians, 373.
Matter, Modern Views of, Oliver J.
 Lodge, 493.
 composition of, 499.
 definition of, 500.
 Matthews, 107.
 W., 226.
 McKinley, President, 347.
 Medical colleges, 531.
 abroad, 335-41.
 early history of, 532-33.
 hospitals, 533-36.
 in England, 536.
 laboratories, 359.
 legislation, 531, 535.
 Science, Need of State Endowment
 for the Advancement of, D. B. St.
 John Roosa, 531.
 Recent Advancement in, R. W.
 Wilcox, 632.
 Melinite, 678.
 Memory, 662.
 Mental activity, 251.
 disorders, 246.
 Mentone, 237.
 Merivale, H., 332.
 Merrington, Marguerite, 117.
 Metamorphosis, 667.
 Metargon, 128.
 Michelangelo, 473-75.
 Michelson, 129.
 Michiels, A., 2.
 Mill, John Stuart, 355-60.
 Millais, 157.
 Miller, Henry, 117.
 Military recruits, physical statistics, 260.
 Mist, *See* Clouds.
 Mitchel, Langdon, 117.
 Mississippi plan, 344, 345.
 negro in, 343, 348.
 Moabite stone, 595.
 Model, The, in art, 149, 153.
 Moguls, 254.
 Mohammed, 230.
Mohammed's Lehre v. d. Offen-
 barung, 230.
 Mohr, J. C. B., 218.
 Monroe Doctrine, 447-48.
 Montaigne, 252.
 Moon, The, compared with the
 earth, 51.
Moral Instinct, Origin and Growth
 of, 588.
 Morality, 588, 612.
 Morphine, 645-46.
 Morris, Wm., 83, 304.
 Mosquito, Coast, 449.
 as parasite, 636.
 Mountains, origin of, 61-69.
 Mouse control, 548.
 Muller, F. M., 232.
 Municipal government, *See* Govern-
 ment.
 Government by Party, F. Goodnow,
 618.
 Music, in American cities, 189.
 Mwetyi, 580.
Mythology, Contributions to the Science
 of, 232.
 Myths, 583-85.
 National Municipal League, 618.
 Nations, formation of, 12.
 Nature cult, 593.
 Naturalism, 146, 293.
 in art, 142, 143, 155.
 in the novel, 210.
 Natural science, 41.
 National Arts Club, 94.
 Academy of Design, 89, 93.
 Navaho, 226.
Navaho Legends, 226.
 Naval arch, 92.
 Records Society, 410.
 Navy, *See* England, Mahan.
 Nebular hypothesis, 43, 47.
 Necho, 251.
 Negro, *See* Southern Question.
 sentiment of the North toward, 351.
 disfranchisement of, 343, *et seq.*
 death rate, 253.
 Neon, 128.
 Neptune, 44.
 Nerve phenomena, 493.
 transfer, 495.
 Nervous diseases, 246, 265.
 Neutralization of great lakes, 447.
 of Nicaragua Canal, 447.
 opinions of American statesmen
 concerning, 447, *et seq.*
 Newcomb college, 87.
 Newspapers and the theatre, 115.
 New York public buildings, 92.
 New Orleans, 87.
 Nicaragua canal, fortification of, 459.
 Neutralization of, J. R. Procter, 447.
 Nitro-glycerine, 667-80.
 Nixon, 101.
 Nominalist, The, 16.
 Nordau, 265.

- Normans, 243.
 race, 12.
 North. *See* Negro.
 North Carolina, negro in, 345.
 Novel, The, 205.
 history of the modern, 206.
 writing. *See* Future of the Short Story.
 Ocean currents, 55, 78.
 depth of, 71.
 Okuma, Count, 178.
 O'Neill, 101.
 Opium in America and Europe, H. T.
 Finck, 188.
 in Chicago, 188.
 profits in, 191, 201.
 Opium, 625.
 Organic life, its effect on the earth, 79.
 Origin of whirl storms, 55.
 Ornament, 154.
 Ostrogoths, 241.
 Outh, 227.
 Page, Wm., 135.
 Paganism man, 236.
 Panama canal, 453.
 Pann, O., 230.
 Parallel events, 250-252.
 Parag, 23.
 Paris theatres, 221.
 Particles, velocity of, 516.
 measurement of, 517.
 method of counting, 519.
 Pastorality, 225.
 Peasants' rebellion, 426.
 songs, 225.
 Peck, H. T., 309.
 Pelissier, 39.
 Pepys, 10.
 Perry, Commodore, 164.
 Persia, 220.
Peter Chronicles, 6.
 Pierre, W. M. F., 242.
 Phallic worship. *See* Morality and Religion.
 Photography, 222.
 astronomical, how done, 226.
 telescope, 227.
 Phototherapy, 222.
 Physical sciences. *See* American.
 French, etc.
 Physical Science, Recent Advance in,
 J. Trowbridge, 123.
 Pindar-Labrum, 25.
 Pindar, 251.
 Pinero, 332.
 Pinto, Mender, 165.
 Pisani, 156.
 Plague, 250.
 Planet, formation of a, 47, 48.
 origin of rotating movement, 48.
 Play, The, under the star system, 335-
 form of, 425-427, 428.
 Scene a Faire, 428, 429.
 Plays. *See* The Syndicate.
 Playwrights, 117.
 Political conditions, during and after
 civil war, 340-345.
 parties, 621-628.
 Polonium, 127.
 Polygamy, 242.
 Polynesian race, 249.
 Population, 241.
 increase of town, 263.
 Portrait painting, 30.
 Portraiture, 156.
 Positiveness, 355.
 Poverty, influence on man, 252.
 Precipitation, effects of, on earth, 50, 58.
 Primitive man. *See* Man.
 Production, 502.
 Prohibition, 623-625.
 Promiscuity, 367.
 Psoriasis, 622.
 Psyche, 235.
 Psychology, 602.
 alarm factor of in, 571.
 economic, 561, 565.
 hunger factor of in, 563.
 love factor of in, 565.
 Public, The, and art, 90.
 Pajo, 38.
 Pythagoras, 251.
 Queensland Aborigines, Ethnological
 Studies among the N. W. Cen-
 tral, 227.
 Rate increase, 221.
 Radiation, electric, 511.
 Radicalism, The, 385.
 Railroad in Japan, 176.
 Ramsey, 128.
 Raphael, 156.
 Raoul, 375.
 History of Mankind, 380, 390, 392.
 Rayleigh, 125.
 Realism, The, 16.
 Realist Movement, The, 421-26.

- Religion*, Early, Relation between, and Morality, E. Buckley, 577.
Recent Works in the Science of, C. H. Toy, 217.
 See also Biblical, Islamic, Mahdism, etc.
 influence of, on man, 578, 589, 598, 603.
Introduction to the History of, 219.
The Making of, 223.
 elements of the science of, 222.
 science of, defined, 218.
 periodicals devoted to, 218.
 comparative, 226.
 early conditions in, 145.
of Primitive Peoples, 225.
 congress of, 38.
 and art, 145, 153.
Religious Facts, The Value of, 224.
Religionsgeschichte, Lehrbuch d. alttest, 229.
 Reichel, W., 232.
 Renard, 8, 16.
 Representation, 649-658.
 Revery, 665.
 Reville, A., 580, 601.
Revolte, 6.
 Rhigi, 129.
 Rubens, 128.
 Ruskin, John, 134.
as Economist, P. Geddes, 280.
 Russell, Annie, 119.
 Roberts, Sir Randal, 333.
 Rich & Harris, 113.
 Richardson, 206.
 Rogers Bros., 113.
 Rohde, E., 233.
 Roman Catholics in N. E., 349, 354.
Canon Law in the Church of England, 404.
Festivals, etc., of the Period of the Republic, 234.
 soldier, endurance of, 238.
 the degeneration of, 240.
 Romanticists, 422-24.
 Rome, religion of, 239.
Romer, Die Religion der, 234.
 Rontgen, 123, 125.
 rays, 513, 515, 518, 525, 542, 641.
 Rossetti, 157, 158.
 Roth, W. E., 227.
 Round, J. H., 406.
 Rousseau, 23.
 Royal Academy of Arts, 88.
 families, degeneracy of, 242, 275.
 Royce, J., 225.
 Roz, 38.
 Rutherford, 549-53.
 Rzewuska, See Hanska.
 Sacrifice, 219.
 See Religion and Morality.
 Sainte-Beuve, 2.
 Saint-Simon, 10.
 Sakya Muni, 251.
 Salon, Paris, 88.
 Sand, George, 315.
 Sanitary conditions, See Degeneration.
 Sarcey, 5, 6, 7, 428.
 Satcho clans, 173.
 Satsuma clan, 169.
 Saturn, 44, 47.
 Saussaye, 220.
 Scaliger's "Poetics," 2.
 Scotland, 244.
 death rate in, 268.
 Sculptors, American, 93.
 Sculpture Society, 93, 94.
 Scurvey, 256.
 Sea bottoms, 61-63, 68.
 levels, 68.
 Séailles, 30.
 Selection, natural, 258.
Semetic Influence on Hellenic Mythology, 233.
 Semetic religion, 228.
 Serfs in England, 402.
 Seventeenth century conditions, in England, 10.
 in France, 10.
 in Italy, 10.
 Scene a Faire, See Play.
 Schoolcraft, 382, 387, 389-90.
 Scribe, 424, 425, 427-31.
 Scutage, 404-6.
 Shakespeare, 251.
 Shakespeare's plays, expense of presentation of, 328, 330.
 Shakla cult, 591.
 See Hindu cult.
 Shell, effect on armor plate, 684-85.
 Shiva cults, 590.
 Shintoism, 605.
 Shogunate, See Japan.
 Siennese artists, 156.
 Silver, metallic, use of, 643, 644.
 Slavery, See Southern Question.
 Slavery, 358.
 Smend, A., 229.
 Smith, H. P., 230.
 Snake indians, 370.
 Social instincts, how acquired, 359.

- Society*, Institution of, L. M. Keasbey, 355.
 Soil, production of, 57.
 Solar energy, effect on earth and moon, 50, 51.
 Sothern, 113.
South Africa, Comments on the War in, E. L. Zalinski, 436.
South African War, *See* Boers.
South Carolina, negro in, 343.
South, homogenousness of, 350.
Southern Question, The, E. P. Clark, 340.
 Spectacles, invention of, 247.
 Spencer, B., 227.
 Spencer, Herbert, 134, 221.
 Stage, The, *See* Irving, Drama, Theatrical Syndicate, etc.
 Star catalogue, 555.
 system in the drama, 335.
 vapor, 45.
 State government, *See* Government.
 Stephen, Leslie, 144.
Story, Future of the Short, E. C. Black, 205.
 Sterne, 206.
 Stigmatists, 651.
 Sub-marine boats, 689.
 Suez canal, neutralization of, 460.
 Suffrage, property qualification, 353.
 See Southern Question.
 Suicide, 271.
 Sullivan, Sir Arthur, 200.
Sun, Influence of the, Upon the Formation of the Earth's Surface, N. S. Shaler, 41.
 Superorganic evolution, 360.
 Surgery, 633.
 Sutherland, A., 588.
 Syphilis, 250.
 Taboo, 220.
 Taine, 2, 9, 11, 17.
 Tait, J., 227.
 Tasso, 252.
 Tavesin, 593, 601.
 Taxation, methods of, in mediæval England, 402-6.
 Telescope, *See* Photography.
 Telegraphy, wireless, 123.
 Temperature, change in, 77.
 Tenement house exhibition, 304.
 Theatres, American, 100.
 division of, 101.
 control of, 103.
 Theatrical stock companies, 104.
Theatrical Syndicate, Norman Hapgood, 99.
 syndicate agreement, 120.
 managers, *See* Theatrical Syndicate.
 Theatres of Paris, 421. *See* French drama.
 Theatre, Impressions de, 8.
 Theism, 221.
 Therapeutics, 645.
 Thomson, 131.
 Tides, 50.
 Tiele, C. P., 222.
 Tien Chinese, 399.
 Tiresias, 4.
 Topinard, 270.
 Torpedo, 689, 690.
 defence, 683.
 gun, 685, 687.
 pneumatic, 687.
 Totemism, 202, 227, 603.
 Towns, origin of English, 403.
 life in, 408.
 Trade winds, 54.
 Transcendentalism, 421.
 Transformation in literary criticism, 1.
 Trevelyan, George M., 416.
 Tribal economy, 381.
 Tribe, organization of the, 392.
Tristram Shandy, 206.
 Tropics, Europeans in, 253.
 Trust, The Theatrical, 99.
 Tuberculosis, 636.
 Tumors, 641.
 Turner, J. M. W., 145, 155.
 Turkish race, 255.
 Tylor, E. B., 579, 596.
 Uitzilopocktli, 595.
 Utility, 286.
 Valetton, Jr., J. J. P., 230.
 Value, intrinsic, 295.
 Vandals, 441.
 Vapor, its influence in retaining heat, 52.
 Varune, Hymns to, 600.
 Vaux, de, C., 230.
 Veddahs, 370.
 Venetian art, 158.
 Vertical fire, 400.
 Vesuvius, The, 686, 688.
 Vibrations, 512-18.
 Victorium, 128.
 Villian, The, in England, 403.
 Villemain, 2.
 Virgil, 252.



3 8198 322 524 420

REFERENCE
FOR READING ROOM
USE ONLY

